

## APPENDICES

Appendix A Specific Items of Cooperat5ion Between Alaska Department of Fish and Game, US Fish and Wildlife Service, Bureau ol Land Management, and US Army Alaska

Appendix B Specific Items of Cooperation between Bureau of Land Management and US Army Alaska for Management of Army Lands in Alaska

Appendix C Other Cooperative Agreements

Appendix D Management Action Plans

Appendix E Fort Wainwright Flora

Appendix F Fort Wainwright Fauna

Appendix G Applicable Federal Laws, Regulations, Executive Orders, Directives, and Policies

Appendix H Response to Public Comments on Draft FWA INRMP

## **APPENDIX A Specific Items of Cooperation Between the Bureau of Land Management, U.S. Fish and Wildlife Service, Alaska Department of Fish and Game, and U.S. Army Alaska**

**PURPOSE:** The purpose of this document is to list specific items to be provided by the Alaska Department of Fish and Game (ADF&G), U.S. Fish and Wildlife Service (USFWS), Bureau of Land Management (BLM), and U.S. Army Alaska (USARAK) for cooperative implementation of the Fort Wainwright Integrated Natural Resources Management Plan. Items not specifically listed will generally be the responsibility of USARAK unless the other agencies agree to assist with their implementation.

**AUTHORITY:** In accordance with the authority contained in Public Land Order 99-606, Title 10, U.S. Code, Section 2671, and Title 16, U.S. Code, Section 670 the Department of Defense, the Department of Interior, and the State of Alaska, through their duly designated representatives whose signatures appear on the Fort Wainwright Integrated Natural Resources Management Plan, specifically approve the Integrated Natural Resources Management Plan and the below items of cooperation.

### **MUTUAL AGREEMENT:**

- Persons hunting or fishing the lands or waters of Fort Wainwright shall be required to obtain special Fort Wainwright hunting trapping, or fishing licenses unless exempt by USARAK regulations. At present, there is no cost for these licenses, but USARAK reserves the right to charge for these licenses in the future. Any funds derived from the sale of these licenses would be used exclusively for the implementation of the Fort Wainwright Integrated Natural Resources Plan in accordance with Army regulations and the Sikes Act. Fees charged would be established by the installation in accordance with Army regulations. Persons guilty of violating the requirement for these special licenses may be prosecuted under 10 USC 2671(c).
- Persons hunting, trapping, or fishing the lands of Fort Wainwright must purchase state licenses, tags, and stamps as required by ADF&G, unless exempt by ADF&G regulations. Military personnel on active duty and permanently stationed in Alaska may purchase special fishing and small game licenses at resident prices. Active duty military personnel, not including dependents, may hunt big game without licenses or tags on military lands open to hunting providing they follow ADF&G hunting regulations. A harvest ticket is required. Nonresident military hunters (lived in Alaska less than 12 months) stationed in Alaska must purchase nonresident hunting licenses and appropriate big game tags to hunt big game, but the tags will only cost one-half the normal nonresident price.
- A Federal waterfowl stamp is required for hunting waterfowl on Fort Wainwright as prescribed by Federal laws.
- All hunting, fishing, and trapping on Fort Wainwright will be in accordance with federal and state fish and game laws.
- Representatives of ADF&G, BLM, and USFWS will be admitted to the installation at reasonable times, subject to requirements of military necessity and security. Such personnel may use U.S. Army

transportation on a nonreimbursable basis, to include aircraft, for wildlife related functions on Fort Wainwright provided such transportation is available without detriment to the military mission.

- ADF&G, BLM, and USFWS shall furnish technical assistance for development and implementation of professionally sound natural resources programs on Fort Wainwright, provided funding for such support is available.
- USARAK shall furnish assistance and facilities to ADF&G, BLM, and/or USFWS for mutually agreed upon natural resources research projects.
- No exotic species of fish or wildlife will be introduced on Fort Wainwright lands without prior written approval of the Army, BLM, ADF&G, and the USFWS.
- The State of Alaska shall establish season and bag limits for harvest of game species on Fort Wainwright.
- Hunting, trapping, and fishing on Fort Wainwright will be authorized and controlled by the installation commander in accordance with locally published installation regulations promulgated in compliance with applicable Federal and State laws, Army regulations, military requirements, and the Integrated Natural Resources Management Plan.
- USARAK will operate biological check stations to collect moose data required by ADF&G and USARAK. ADF&G may collect additional data on fish or wildlife resources at Fort Wainwright with approval of USARAK for access to training lands
- Public access for hunting, trapping, and fishing is approved under a system of controls established by USARAK in cooperation with ADF&G. Civilians will be considered on an equal basis with military and Army civilian employees for permits and access to Fort Wainwright. Hunting, trapping, and fishing will be allowed only on those areas where there is no conflict with military training activities and no unreasonable safety hazard to participants, military personnel and dependents, or Army civilian employees. Certain areas will be closed to hunting and fishing, including, but not limited to impact areas containing unexploded ordnance and training areas with sensitive electronic equipment. Such areas will be marked as closed on installation hunting maps.
- USARAK agrees that persons using PL 99-606 or PL 2676 withdrawn lands for commercial purposes must have BLM permits in addition to Army approval.
- ADF&G agrees to continue to stock Fort Wainwright lakes. ADF&G will determine the number and species of fish to be stocked based on angler use trends and fish availability.
- It is understood that implementation of this INRMP requires certain latitude with regard to professional decisions. However, USARAK agrees that any land use change which significantly

impacts natural resources must include modification of this INRMP in addition to any other environmental compliance requirements.

- USARAK has the option to directly transfer funds to the ADF&G, USFWS, or BLM, for implementation of this Integrated Natural Resources Management Plan.

**When USARAK chooses the option to directly transfer funds to ADF&G, USFWS, or BLM, USARAK agrees:**

1. To develop a scope of work for each project to be accomplished under this agreement.
2. To issue a delivery order or MIPR, executed by a USARAK contracting officer or budget officer, obligating funds to accomplish the agreed-upon scope of work at an agreed-upon price.
3. To reimburse ADF&G, USFWS or BLM for any supplies, equipment, travel and personnel services (including salary, benefits, sick and annual leave accrual), direct administrative cost for project procurement, logistical arrangements (travel, housing, utilities, vehicles, conferences, workshops and project reviews), human resources (job searches, processing of employment forms, project-specific personnel issues, time sheets, hourly employees and leave reports), project reports (editing, graphics, publication), program management, and overhead cost not to exceed 10%, consistent with OMB Circular A-21.

**ADF&G, USFWS and BLM agree:**

1. To provide technical assistance through employees or qualified agents who have the expertise necessary to carry out the purpose of this agreement.
2. To enter into consulting agreements or subcontracts with other qualified agents who have the expertise to assist in the execution of this agreement.
3. To purchase equipment, software, and materials and provide maintenance and repair of equipment that is required to carry out the purpose of this agreement. The equipment purchased under this agreement will be used to satisfy the objectives of this agreement. USARAK will reimburse ADF&G, USFWS or BLM for the purchase price of required equipment and materials and cost of the maintenance and repair of said equipment necessary for project completion. Equipment and material over \$1000.00 purchased under this agreement shall become property of USARAK at the completion of work undertaken pursuant to this agreement.
4. To bill USARAK quarterly on a reimbursable basis for costs as provided under the terms of this agreement and individual delivery order or MIPR. Billing statements should be addressed to:  
Directorate of Public Works  
730 Quartermaster Road  
ATTN: APVR-RPW-EV (Johnson)  
Fort Richardson, Alaska 99505-6500

**All parties agree:**

- That each party will assign a project officer to execute this agreement and that a meeting between the assigned project officers or their designated representatives shall take place at least twice a year. The first meeting shall be no later than March 15 of each year to determine the project priorities and funding required for the next federal fiscal year. The second meeting shall occur no later than October 15 of each year to finalize project goals and funding for that federal fiscal year. Other meetings will be held as requested by either party. It is understood by both parties that available funding is not guaranteed and that no work can be started until funding has been sent. An annual operating plan to be formulated by the parties' assigned project officers or designated representatives will be submitted to the Chief, USARAK Environmental Resources Department no later than March 30 of each year for funding during the next federal fiscal year.
- That USARAK will have final authority to prioritize projects.
- That the Comptroller General of the United States, the USARAK contracting officer, or their duly appointed representatives, or cognizant audit agency shall have access to all directly pertinent books, documents, papers, and records relating to Alaska Department of Fish and Game, US Fish and Wildlife Service, Bureau of Land Management and US Army Alaska's engagement in the performance of duties or involving any transactions relative to this agreement.
- It is the expectation of the parties that all obligations of USARAK under this agreement will be fully funded. Any requirement for the payment or obligation of funds by USARAK under the terms of this agreement shall be subject to the availability of funds. No provision herein shall be interpreted to require obligation of payment of funds in violation of any statute.

#### **LIMITATIONS:**

The military mission of Fort Wainwright supersedes natural resources management and associated recreational activities; and, such activities must in all instances be compatible with the military mission. However, where there is conflict between the military mission and provisions of the Endangered Species Act, the Sikes Act, or any other law associated with natural resources conservation, such conflicts will be resolved according to statutory requirements.

#### **REQUIRED REFERENCES:**

- Nothing contained in this agreement shall modify any rights granted by treaty to any Native Alaskans or Indian tribe or to members thereof.
- The possession of a special permit for hunting migratory game birds will not relieve the permittees of the requirements of the Migratory Bird Stamp Act, as amended.
- This INRMP is a Federal Facilities Compliance Agreement.
- As required by the Sikes Act, the following agreements are made:
  1. This Fort Wainwright Integrated Natural Resources Management Plan is the planning document required by the Sikes Act, as amended. This Plan contains those items specifically required by law.

In the event the Sikes Act is amended after this INRMP is signed, this plan will be amended to conform with the new requirements within the Sikes Act if needed.

2. This plan will be reviewed by ADF&G, BLM, USFWS, and USARAK on a regular basis, but not less often than every 5 years.
3. No land or forest products from land on Fort Wainwright will be sold under Section 2665 (a) or (b), Title 10 USC and no land will be leased on Fort Wainwright under Section 2667 of such Title 10 unless the effects of such sales or leases are compatible with the purposes of the Integrated Natural Resources Management Plan.
4. With regard to the implementation and enforcement of the Fort Wainwright Integrated Natural Resources Management Plan, neither Office of Management and Budget Circular A-76 nor any successor circular thereto applies to the procurement of services that are necessary for that implementation and enforcement, and priority shall be given to the entering into of contracts for the procurement of such implementation and enforcement services with Federal and State agencies having responsibility for the conservation or management of fish or wildlife.
5. The Fort Wainwright Integrated Natural Resources Management Plan is not, nor will be treated as, a cooperative agreement to which chapter 63 of title 31, United States Code applies.
6. This Integrated Natural Resources Management Plan will become effective upon the date subscribed by the last signature and shall continue in full force for a period of five years or until terminated by written notice to the other parties by any of the parties signing this agreement. This agreement may be amended or revised by agreement between the parties hereto. Action to amend or revise may originate with any of the other participating agencies.
7. USARAK, ADF&G, and the USFWS enter into this agreement based on the requirements and opportunities within the Sikes Act, as amended. These three parties are aware that the BLM is also a signatory partner to this Integrated Natural Resources Management Plan.

## **APPENDIX B Draft Memorandum of Understanding Between the Bureau of Land Management and U.S. Army Alaska for the Management of Military Lands in Alaska**

### **1. PURPOSE**

This document lists specific of cooperation between the Bureau of Land Management (BLM) and U.S. Army Alaska (USARAK) for cooperative management of all public lands withdrawn for military use by the Army in Alaska accordance with the Military Lands Withdrawal Act of 2001 (Public Law 106-65). This document serves as the Memorandum of Agreement required by PL 106-65 and FLPMA.

### **2. AUTHORITY**

- A. Military Lands Withdrawal Act of 2001 (P.L. 106-65)
- B. Federal Land Policy and Management Act of 1976 (P.L. 94-579), as amended
- C. Sikes Act (P.L. 86-797), as amended
- D. National Environmental Policy Act of 1969 (P.L. 91-190), as amended (NEPA)

### **3. OBJECTIVE**

To improve communication and coordination and ensure cooperation between all BLM and USARAK.

The Military Lands Withdrawal Act of 2001 authorized the re-withdrawal of certain public lands in Alaska for continued military use as parts of Fort Greely and Fort Wainwright. The Act required the Secretary of the Interior to manage the lands pursuant to the Federal Land Policy and Management Act of 1976 and other applicable laws. Pursuant to the Act, BLM and USARAK developed Resource Management Plans (RMP)s for the management of natural resources on the withdrawn lands and enter into this Memorandum of Understanding (MOU) to implement those plans. The Resource Management Plans for Fort Wainwright will be reviewed as necessary and amended upon agreement by both BLM and USARAK.

The Sikes Act Improvement Act (1998) requires the completion of Integrated Natural Resource Management Plans for all military lands, including withdrawn lands. As required by the Sikes Act, the following agreements are made:

- (1) This US Army Alaska Integrated Natural Resources Management Plan is the planning document required by the Sikes Act, as amended.
- (2) This Plan will be reviewed by the ADFG, BLM, USFWS, and USARAK regularly, but not less often than every five years.

Through this MOU, USARAK and BLM will fulfill the mandate of the Military Lands Withdrawal Act of 2001 to implement plans for land withdrawal and the Sikes Act. This agreement clearly defines the roles and responsibilities of the two agencies to efficiently and effectively manage the nonmilitary uses and natural resources of these withdrawn lands.

This MOU outlines the procedures with which BLM and USARAK will implement the plans. This management is to be consistent with applicable law, subject to such conditions and restrictions necessary to permit the military use of such lands, and provide for proper management and protection of the

resources and values of such lands, including protection of wildlife and wildlife habitat, recreation, and fire prevention and suppression of fires.

## 4. DEFINITIONS

### 4.1 Joint Stewardship and Joint Management

Joint management refers to Congressionally directed shared responsibility by the Bureau of Land Management (BLM) and that Department of Defense (DoD) for organizing, controlling, and supervising activities on certain withdrawn federal lands.

Joint stewardship refers to the working relationship entered into between USARAK, ADF&G, USFWS, and BLM for the care of withdrawn federal lands in Alaska and associated resources used by USARAK for military mission requirements.

The majority of the land currently used by USARAK is on long-term withdrawal from public domain lands originally assigned to the Department of the Interior's (DOI) Bureau of Land Management (BLM). Provisions for management of these lands are generally specified in each of the Public Laws, Public Land Orders, Executive Orders, and other enabling documents.

Whenever the military uses a tract of public land originally assigned to another agency it incurs legal and moral responsibilities for the stewardship of the land and its resources. Residual responsibility for USARAK withdrawn lands remain with BLM, who retains interest in the stewardship of the transferred parcel, even though the land is under DoD's long-term management.

The reason USARAK land is withdrawn from other public use to the military is to enhance military readiness in the interest of national defense. If the land were intended to be managed primarily for multiple uses, it would not be managed by a military service. Under USARAK management, land is used primarily for national security purposes (e.g., training and testing), but will also be managed to accommodate additional uses as long as they do not impinge on the primary military readiness mission.

### 4.2 Specific Lands Withdrawn for Military Use in Alaska

Lands withdrawn for military use in Alaska referenced in this agreement include the following:

#### Fort Greely and Donnelly Training Area

- Donnelly East and West Training Areas (PL 106-65)

- Fort Greely Main Post

- Gerstle River Training Area

- Black Rapids Training Site

- Whistler Creek Training Site

#### Fort Richardson

#### Fort Wainwright

- Fort Wainwright Main Post

- Tanana Flats Training Area

- Yukon Training Area (PL106-65)

### 4.3 Military Use vs. Non-Military Use



#### 4.3.1 Nonmilitary Activities

Nonmilitary use: All human use of the land or natural resources of these withdrawn lands that is not connected in any way to the military mission.

1. All nonmilitary use of these withdrawn lands shall be subject to such conditions and -restrictions as may be necessary to permit the continued and future military use of such lands. Any use authorized by BLM will require USARAK concurrence so that military use of the land is not restricted.
2. BLM or the proponent shall prepare environmental documentation for nonmilitary activities on these withdrawn lands following a preliminary consultation with USARAK. BLM shall coordinate all NEPA documents, formal consultations, and permits with USARAK, providing opportunity to comment, during each stage of the authorization process. USARAK shall comment in writing. BLM will provide USARAK copies of all final NEPA and authorization documents.
3. BLM may issue use authorizations or resource sales only with the concurrence of USARAK. USARAK will grant or deny concurrence in writing. USARAK will respond to a request for project review and concurrence within 30 calendar days, except that extensions of time may be requested for cause. Generally, actions which can be approved locally will be returned within the allotted time; however, for any actions which require approval at higher headquarters (outside Alaska), an additional 30-60 days will be required. USARAK may attach stipulations designed to protect military present and future use of the land to any concurrence for nonmilitary use. Such stipulations, however, shall not be used as a de facto means of denying nonmilitary use. USARAK's concurrence may be withdrawn for cause.

#### 4.3.2 Military Activities

Military use: Any use of the land or natural resources connected in some way to the present or future military mission. Since implementation of all projects detailed in the Sikes Act INRMP support the military mission, all projects and uses contained in the USARAK INRMP are by definition classified as a military use.

1. USARAK or the proponent of military activities shall prepare environmental documentation for military activities on these withdrawn lands in accordance with 32 CFR 651. This environmental documentation should address impacts of the proposed military activities on the decisions and resources addressed in the RMP and the associated activity plans. USARAK shall coordinate all NEPA documents, formal consultations, and permits with BLM, providing opportunity to comment, as appropriate. BLM shall comment in writing. USARAK will provide BLM copies of all final NEPA and authorization documents
2. USARAK shall promptly notify BLM in the event that these withdrawn lands will be used for defense-related purposes other than those specified in Section 1 of the Military Lands Withdrawal Act of 1986 (Sec. 3(t)). Such notification must indicate the additional uses involved, the proposed duration of such uses and any proposed restrictions to be imposed on otherwise permitted non-military uses of the withdrawn lands.

#### 5. MUTUAL AGREEMENT

USARAK and BLM agree to the following measures to coordinate implementation and resolve disputes regarding this MOU and the RMPs:

1. The primary USARAK point of contact will be the local Natural Resources Manager (currently located within the Directorate of Public Works, Environmental Resources Department). The Natural Resources Manager will coordinate actions through the appropriate military chain of command for approval or concurrence.

2. The primary BLM point of contact will be the Planning Environmental Coordinator for the Northern Field Office. The Planning Environmental Coordinator will coordinate actions through the appropriate BLM chain of command for approval or concurrence.

3. The second level for project coordination and dispute resolution shall be:

- a. USARAK --Director of Public Works, Fort Richardson, Alaska.
- b. BLM-- Manager, Northern Field Office.

4. The above named points of contact may be changed by giving written notification.

5. The third level of project coordination and dispute resolution shall be:

- a. USARAK--USARAK Commander
- b. BLM-Alaska State Director

6. USARAK and BLM may enter into supplemental agreements where necessary to specify interrelationships in detail or for specific projects or activities. Any supplemental agreement will be in accordance with this MOU and the Military Lands Withdrawal Act of 2001.

C. USARAK and BLM will review this MOU at least every 3 years to determine its adequacy, effectiveness, and need for updating.

D. The terms of this MOU may be renegotiated at any time at the request of either signatory, following 30 days notice to the other party.

E. Either party may propose changes to this MOU during its term. Such changes will be in the form of an amendment and will become effective upon signature by both parties. Such amendments may be signed by the signatory or that person's successor or designee.

F. This MOU will expire November 6, 2026, unless cancelled, extended, or renewed.

G. This MOU will become effective upon signature by the BLM and USARAK.

## 6. RESPONSIBILITIES

### 6.1 Access

1. The military's need for secure and safe training areas dictates that USARAK has responsibility for controlling access to these withdrawn land. In the exercise of these responsibilities and in conformance with decisions reached in the resource management plans, USARAK:

- will maintain signs at all major road and trail entrances to the withdrawn lands identifying the property and the requirements for entering,

- will maintain signs warning the public and prevent access into impact areas and other restricted areas, c. may allow specific nonmilitary uses and users into closed areas as appropriate,
- will close potentially dangerous lands in addition to those described in the RMPs, if any are created or discovered,
- may close a buffer zone around impact areas during times of use,
- may close any area of the withdrawals in accordance with Sec. 3(b), PL 106-65,
- may restrict vehicle use more than described in the resource management plans, if required to preclude conflicts with the military's mission, and
- will remediate the two Nike battery sites in the Yukon Maneuver Area as funding is made available to eliminate potential human health risks.

2. BLM, in coordination with USARAK, may impose greater restrictions on nonmilitary vehicle use than described in the RMPs as necessary to protect the environment.

3. BLM and USARAK, through mutual consent, may lift restrictions on vehicle use described in the RMPs.

4. All trespass constitutes an infringement upon the military mission and is subject to BLM and USARAK law enforcement activities. In cases in which the action of the trespasser, if otherwise undertaken pursuant to valid permit or other authorization, would require the payment of rentals, fees, or appraised value, USARAK will coordinate law enforcement activities with BLM. Recovery of damages or lost revenue shall be carried out by BLM, but shall in no way inhibit or delay USARAK's abatement activity .

## 6.2 Ecosystem Management

Ecosystem management on Fort Wainwright and Fort Greely is the primary responsibility of USARAK. Coordinating the many land uses on post is the responsibility of DPTSM Range Control, while management of natural resources and recreation is the responsibility of DPW. Most commercial uses and all leases, easements and rights of way must be permitted by BLM, with concurrence by USARAK. Both USFWS and ADF&G play integral roles in ecosystem management both on the installation and in regional ecosystem management efforts.

## 6.3 Integrated Training Area Management (ITAM)

ITAM is the primary responsibility of USARAK. The ITAM Program links the efforts of the DPTSM, who has responsibility for installation training land management, with the efforts of the DPW and the natural and cultural resources/environmental staffs to support the overall objectives of sustaining a well-trained and equipped combat force.

## 6.4 Watershed Management

Watershed management on Fort Wainwright and Fort Greely is the responsibility of USARAK. Within USARAK, DPW Environmental Department has primary responsibility to conduct watershed management. DPTSM also shares responsibilities to implement soil and water quality management through the LRAM program and through best management practices of the impact areas. US Army Corps of Engineers, under the Clean Water Act, is the primary regulator. The Environmental Protection Agency also has regulatory responsibility under the Safe Drinking Water Act. ADEC also has responsibility for regulating soil and water quality.

USARAK recognizes that the release of contaminants into the environment and response actions to cleanup those contaminants may result in adverse impacts to natural resources addressed in the RMPs and the INRMP. The Installation Restoration Program (IRP) is responsible for identifying such releases, considering risks and assessing impacts to the environment (including impacts to endangered species, migratory birds and biotic communities), and developing and selecting response actions when unacceptable risk to ecological receptors from the release is likely. The installation's natural resource management staff, in coordination with the USFWS and Alaska Department of Fish and Game, will identify potential impacts to natural resources caused by the release of contaminants and communicate those impacts to the IRP. Installation natural resource staff will also participate, as appropriate, in the IRP decision making process to communicate natural resource issues, review and comment on documents (e.g. Remedial Investigation, Ecological Risk Assessment), and ensure that response actions, to the maximum extent practicable, are undertaken in a manner consistent with goals and objectives set forth in the INRMP.

The IRP will notify installation natural resource management staff of contaminant releases into the environment and invite such staff to participate in the decision making process to ensure that impacts to natural resources are identified, considered and addressed.

## 6.5 Minerals Management

Mineral resources on public lands withdrawn for military purposes in Alaska are managed by BLM under Federal regulations found in 43 CFR 3000. Sale and/or free use of mineral materials require NEPA review, and USARAK concurrence. Unauthorized use of mineral materials is considered trespass and will be resolved jointly by USARAK and the BLM. BLM agrees to permit USARAK use of non-saleable minerals (gravel) for military purposes.

## 6.6 Wetlands Management

Range Control, a component of the Directorate of Plans, Training, Security and Mobilization (DPTSM), is the primary authority for regulating military land use and various stipulations of the permits. Range Control's authority to schedule training facilities and conduct range inspections initiates from the Installation Commander and is explained in the USARAK Range Regulation 350-2, which details acceptable conduct during training exercises in the field to reduce negative environmental impacts.

## 6.7 Forestry and Vegetation Management

All forestry and vegetation shall be managed cooperatively between BLM and USARAK. Forests on withdrawals fall under BLM's restricted category for management; that is, management of the withdrawal is primarily for the military, but timber harvests are permitted.

All vegetation manipulation or removal for the purpose of forest timber sales, habitat management, or land clearing will be conducted according to the policies and principles listed in the applicable RMPs and the INRMP. Any vegetation manipulation by USARAK for military purposes not included in the INRMP or applicable RMPs by USARAK must be approved by BLM.

BLM agrees to grant vegetation management responsibilities and rights to USARAK for military purposes while BLM will maintain vegetation management responsibility for all commercial non-military uses.

For military purposes, US Army timber management practices, contract stipulations, and the mandates of the State's forest practices regulations would govern the sale of timber from these lands. Any funds from the sale of forest products for military purposes shall be deposited into the US Army's forest reserve account and returned to support the management of forest resources on military lands in Alaska. Any costs incurred in the sale of forest products, to include inventory, boundary marking, tree marking, etc., will be the responsibility of USARAK.

For non-military purposes, BLM timber management practices, contract stipulations, and the mandates of the State's forest practices regulations would govern the sale of timber from these lands. Any funds from the sale of forest products for non-military purposes shall be deposited into the US Treasury. Any costs incurred in the sale of forest products for non-military purposes, to include inventory, boundary marking, tree marking, etc., will be the responsibility of BLM.

Members of the public may approach BLM for a permit to purchase timber on withdrawn lands, but each timber sale must be approved by the US Army.

Timber removal and other forest management practices will be coordinated with Range Control to ensure minimal disruption of military training. Scheduling usually will be done three to six months in advance of activities. Appropriate NEPA documentation will be completed prior to implementation of timber stand improvement projects.

No land or forest products from US Army lands in Alaska will be sold under Section 2665 (a) or (b), Title 10 USC, and no land will be leased on US Army lands in Alaska under Section 2667 of Title 10 unless the effects of such sales or leases are compatible with the purposes of the Integrated Natural Resources Management Plan.

## 6.8 Fire Management

The AFS, a BLM agency, has primary fire suppression responsibility for wildfires on lands in central and northern Alaska. The Army has an Inter-Service Support Agreement with BLM whereby AFS is provided facilities on Fort Wainwright in exchange for fire protection on Army lands. Nothing in this MOU shall supercede existing agreements between USARAK and BLM – AFS.

## 6.9 Outdoor Recreation

USARAK is responsible for:

- management of outdoor recreational activities and natural resources,
- coordinated selection and designation of installation outdoor recreation areas,
- coordination of the use of outdoor recreation areas and their maintenance,
- the movement of persons, special events, and organizational elements of outdoor recreation,
- determining the need for various outdoor recreation activities,
- administering the recreation aspects of approved programs,
- issuing use permits to individuals and groups when their requests for recreation access meet policy requirements, and
- removing trespass structures.

BLM is responsible for:

- All commercial requests for recreationan use

- Permitting any commercial recreational use

#### 6.10 Conservation Enforcement

USARAK is responsible for conservation enforcement on USARAK lands. USARAK has concurrent jurisdiction. Conservation enforcement can be performed by officers with federal or state commissions. Enforcement is a joint responsibility of USARAK and Alaska State Troopers. The federal magistrate adjudicates citations written by USARAK officers, unless they are military personnel who violate only post regulations. In these cases, military commanders adjudicate citations. Trooper-issued citations use the state system for adjudication.

#### 6.11 Cultural Resources

USARAK DPW is responsible for cultural resource management. BLM and USARAK are jointly responsible for conducting Section 110 surveys of archaeological resources in the training areas. USARAK is responsible for conducting Section 106, NHPA actions for undertakings that result from natural resource management and military training.

#### 6.12 NEPA

USARAK has primary responsibility for NEPA for actions proposed by the military. Natural resources personnel assist with compliance and documentation. Army Regulation 200-2 (*Environmental Effects of Army Actions*) requires proponents to prepare and fund NEPA documentation.

BLM has primary responsibility for NEPA for actions proposed by the public. BLM is responsible for the NEPA process and all NEPA documentation for any actions not proposed by the military.

### 7. REQUIRED AGREEMENTS

Nothing contained in this agreement shall modify any rights granted by treaty to any Native Alaskans or Indian tribe or to members thereof.

This MOU will become effective upon the date subscribed by the last signature and shall continue in full force for a period of five years or until terminated by written notice to the other parties by any of the parties signing this agreement. This agreement may be amended or revised by agreement between the parties hereto. Action to amend or revise may originate with any of the other participating agencies.

## **APPENDIX C Other Agreements For Implementation Of Natural Resources Management On Army Lands In Alaska**

*Cooperative Agreement for Fire Suppression on Army Lands in Alaska.* The Army has an agreement with BLM – Alaska Fire Service (AFS) whereby AFS is provided facilities on Fort Wainwright in exchange for fire protection on all Army lands in Alaska.

*Cooperative Agreement for Natural, Cultural, and Environmental Support.* This agreement with the Center for Ecological Management of Military Lands at Colorado State University provides support for natural and cultural resources, as well as environmental management.

*Cooperative Agreement for Vegetation Management Support.* USARAK has entered into a cooperative agreement with ADNRS, Plant Materials Center (PMC) to conduct revegetation projects and provide plant materials advice.

*Cooperative Agreement for Erosion Control and Habitat Management.* USARAK has entered into a cooperative agreements with both the Delta Soil and Water Conservation District (DSWCD) and the Palmer Soil and Water Conservation District (PSWCD) for enhancing, rehabilitating, and maintaining USARAK training lands to ensure their continued long-term use and effectiveness. The districts partner with USARAK to conduct LRAM, erosion control, and habitat management projects.

## **Appendix D. Management Action Plans to Support the INRMP**

1. Ecosystem Management Action Plan
2. Habitat Management Action Plan
3. Wetlands Management Action Plan
4. Forest Management Action Plan
5. Special Interest Areas Management Plan
6. Outdoor Recreation Management Action Plan
7. ITAM Action Plan
8. Fire Management Action Plan
9. Soil Resources Management Action Plan
10. Conservation Enforcement Management Action Plan
11. Aerial Monitoring Management Action Plan
12. Landscape Action Plan

USARAK is committed to developing the following plans to support the natural resources management programs described in this INRMP. Development of these plans is addressed within this INRMP, including identification of funding mechanisms and priorities. These plans are summarized here and can be found under separate cover.

### **1. ECOSYSTEM MANAGEMENT ACTION PLAN**

The Ecosystem Management Action Plan will be a comprehensive plan outlining all details for conducting both routine and non-routine wildlife surveys, inventories and monitoring activities on Fort Greely and Donnelly Training Area lands and waters. It will include, but will not be limited to: methodologies, techniques, equipment and personnel requirements, study area locations and sizes (GIS mapping), time schedules, and budget estimates. It also will include roles and responsibilities of all partnering agencies and/or groups participating in those activities. Wildlife species or types for consideration within this plan include: moose, bear (brown and black), wolves, wolverine, lynx, coyote, fox, otter, beaver, small mammals, raptors, waterfowl, ptarmigan, grouse, ravens, neotropical migrants, grayling, and several species of salmon. This plan will be compatible with the military training mission and complementary to the ITAM program, ensuring both a healthy environment and optimum training arena through sound and prudent stewardship.

**AUTHORITIES:** Sikes Act (Public Law 86-797), Endangered Species Act, AR 200-3, and the Cooperative Agreement for management of fish and wildlife resources on Army lands in Alaska.

**CLASSIFICATION PRIORITY:** Class 1 (DAIM-ED-N, 21 March 1997)

### **2. HABITAT MANAGEMENT ACTION PLAN**

The Habitat Management Action Plan will be a prescriptive plan that directs all wildlife habitat rehabilitation, enhancement, and maintenance activities on Fort Greely and Donnelly Training Area. The comprehensive plan will incorporate all facets of wildlife habitat management including methodologies, techniques, equipment and personnel requirements, area locations and sizes (GIS mapping), time schedules, and budget estimates. Wildlife species and groups considered within this plan include: moose, bear (brown and black), wolves, wolverine, lynx, coyote, fox, otter, beaver, small mammals, raptors, waterfowl, ptarmigan, grouse (spruce and ruffed), ravens, neotropical migrants, grayling, and several species of salmon. The plan will be compatible with the military training mission and complementary to



the ITAM program, ensuring both a healthy environment and optimum training arena through sound and prudent stewardship.

AUTHORITIES: Sikes Act (Public Law 86-797), Migratory Bird Treaty Act (16 USC 703-711), Executive Order 12962, Recreational Fishery Resources Conservation Plan, Endangered Species Act, and AR 200-3.

CLASSIFICATION PRIORITY: Class 1 (DAIM-ED-N, 21 March 1997)

### 3. WETLAND MANAGEMENT ACTION PLAN

The Wetland Management Action Plan will be a comprehensive plan written to protect, enhance, and maintain the biodiversity of wetlands on Fort Greely and Donnelly Training Area. The plan will classify and prioritize wetland units in terms of size, functions, and values, with priorities assigned to wetland units. It will include, but will not be limited to: methodologies, techniques, equipment and personnel requirements, study area locations and sizes (GIS mapping), time schedules, and budget estimates. It also will include roles and responsibilities of all partnering agencies and/or groups participating in those activities. This plan will be compatible with the military training mission and complementary to the ITAM program, ensuring both a healthy environment and optimum training arena through sound and prudent stewardship.

AUTHORITIES: Sikes Act (Public Law 86-797) and AR 200-3.

CLASSIFICATION PRIORITY: Class 1 (DAIM-ED-N, 21 March 1997)

### 4. FOREST MANAGEMENT ACTION PLAN

The Forest Management Action Plan will be a comprehensive plan written to implement a forest management program for Fort Greely and Donnelly Training Area. The plan would provide for the enhancement of forest values, benefiting the Army training mission, and protecting and maintaining the productivity and biodiversity of the forest ecosystems on the installation. It will include, but not be limited to: methodologies, techniques, equipment and personnel requirements, study area locations and sizes (GIS mapping), time schedules, and budget estimates. It also will include the roles and responsibilities of all partner agencies and/or groups participating in those activities. This plan will be compatible with the military training mission and the Wildlife Habitat Management Plan, and it will complement the ITAM program, ensuring both a healthy environment and an optimal training arena through sound and prudent stewardship.

AUTHORITIES: Sikes Act (Public Law 86-797) and AR 200-3.

CLASSIFICATION PRIORITY: Class 1 (DAIM-ED-N, 21 March 1997)

### 5. SPECIAL INTEREST AREAS CONSERVATION ACTION PLAN

The Special Interest Areas Conservation Action Plan will address all areas on Fort Greely and Donnelly Training Area that contain unique, rare, unusual, atypical, sensitive, or otherwise special natural resources or environmental conditions that warrant protective or special management practices. Since these areas may vary considerably in their unique or special features, they will be treated individually within the plan.

It will include detailed descriptions of each area along with individual management prescriptions. In some cases, management actions may require stringent protection restrictions and constraints. This plan will be sensitive to and considerate of the military training mission by using a very conservative approach regarding restrictions and prohibitions. It will be fully coordinated with the ITAM program.

AUTHORITIES: Sikes Act (Public Law 86-797) and AR 200-3.

CLASSIFICATION PRIORITY: Class 1 (DAIM-ED-N, 21 March 1997)

## 6. OUTDOOR RECREATION MANAGEMENT ACTION PLAN

The Outdoor Recreation Management Action Plan will be a comprehensive plan directing all outdoor recreation activities on Fort Greely and Donnelly Training Area with respect to the use of natural resources and the effects on the military mission. The plan will assess current and potential activities including, but not limited to: hunting and fishing, boating, off-road vehicle use (ATVs, snowmachines, airboats, airplanes), camping, picnicking, dog racing, horseback riding, berry picking, skiing, and bird watching. It will address issues including, but not limited to: access, management of use to avoid damage to wildlife habitat and training areas, harassment of wildlife, poaching, trespass, harvest limits, and usage fees. The plan will provide recommendations regarding the levels and types of use specific areas can sustain without adverse impacts. It also will include the roles and responsibilities of all partner agencies and/or groups participating in those activities. This plan will be compatible with the military training mission and it will complement the ITAM program, ensuring both a healthy environment and an optimal training arena through sound and prudent stewardship.

AUTHORITIES: Sikes Act (Public Law 86-797) and AR 200-3.

CLASSIFICATION PRIORITY: Class 1 (DAIM-ED-N, 21 March 1997)

## 7. ITAM ACTION PLAN

The ITAM Action Plan will address all actions necessary to implement the ITAM plan on Fort Greely and Donnelly Training Area. The ITAM plan will consist of monitoring the quality of training lands, providing data needed to make land use decisions, creating an awareness among land users of the importance of good land stewardship, preventing damage to land, and repairing damaged lands. The goal of the ITAM plan is to maximize mission use of training lands, minimize land maintenance costs and damage caused to the environment, and effectively meet natural resource management requirements. It also will include the roles and responsibilities of all partner agencies and/or groups participating in those activities. The comprehensive plan will include methodologies, techniques, equipment and manpower requirements, area locations and sizes (GIS mapping), time schedules, and budget estimates. This plan will be compatible with the military training mission, ensuring both a healthy environment and an optimal training arena through sound and prudent stewardship.

AUTHORITIES: Sikes Act (Public Law 86-797) and AR 200-3.

CLASSIFICATION PRIORITY: Class 1 (DAIM-ED-N, 21 March 1997)

## 8. FIRE MANAGEMENT ACTION PLAN

The Fire Management Action Plan will identify and evaluate strategies for conducting wildfire management on Fort Greely and Donnelly Training Area. The plan would reduce forest-fire hazard caused by incendiary training and weapons, and would include a prescribed burning plan to enhance habitat as part of ecosystem management. The comprehensive plan will include methodologies, techniques, equipment and personnel requirements, area locations and sizes (GIS mapping), time schedules, and budget estimates. It also will include roles and responsibilities of all partner agencies and/or groups participating in those activities.

AUTHORITIES: Sikes Act (Public Law 86-797) and AR 200-3.

CLASSIFICATION PRIORITY: Class 1 (DAIM-ED-N. 21 March 1997)

## 9. SOIL RESOURCES MANAGEMENT ACTION PLAN

The Erosion Control Action Plan will identify and evaluate sites in need of erosion control on Fort Greely and Donnelly Training Area and strategies to repair them. The plan also will include detailed scopes of work required to repair each site. The comprehensive plan will include methodologies, techniques, equipment and personnel requirements, area locations and sizes (GIS mapping), time schedules, and budget estimates. It also will include the roles and responsibilities of all partner agencies and/or groups participating in those activities.

AUTHORITIES: Sikes Act (Public Law 86-797) and AR 200-3.

CLASSIFICATION PRIORITY: Class 1 (DAIM-ED-N. 21 March 1997)

## 10. CONSERVATION ENFORCEMENT ACTION PLAN

The Conservation Enforcement Action Plan will be jointly developed by Natural Resources and the Fort Greely and Donnelly Training Area Provost Marshal. This action plan will outline responsibilities, communication, duties, regulations, and provisions for carrying out natural resources wildlife enforcement. Protocols will be developed to address communication, meetings, after-action reports, chain-of-command, etc.

AUTHORITIES: Sikes Act (Public Law 86-797) and AR 200-3.

CLASSIFICATION PRIORITY: Class 1 (DAIM-ED-N. 21 March 1997)

## 11. AERIAL MONITORING MANAGEMENT ACTION PLAN

The Aerial Monitoring Action Plan will identify plans for monitoring Fort Greely and Donnelly Training Area from the air. Because of accessibility problems for much of Fort Greely and Donnelly Training Areas' land, aerial monitoring is a tool that is required to keep track of military, recreation, trespass, and fish and wildlife use of training lands. This plan discusses the specific actions necessary to accomplish monitoring on Fort Greely and Donnelly Training Area. Monitoring is a requirement of the Sikes Act and AR 200-3. Per Memorandum DAIM-ED-N, 21 March 1997, this component of the INRMP is a class 1 requirement.

AUTHORITIES: Sikes Act (Public Law 86-797) and AR 200-3.

CLASSIFICATION PRIORITY: Class 1 (DAIM-ED-N. 21 March 1997)

## 12. LANDSCAPING ACTION PLAN

The Landscaping Action Plan will address landscaping and beautification of the post. The plan will present the user with information regarding past and present techniques and procedures for landscaping at Fort Greely and Donnelly Training Area. In addition to providing landscape designs, it will discuss various materials used in landscaping on post and will furnish a detailed listing of plants proven hardy for northern climates. The comprehensive plan will include methodologies, techniques, equipment and personnel requirements, area locations and sizes (GIS mapping), time schedules, and budget estimates. It also will include roles and responsibilities of all partner agencies and/or groups participating in those activities.

AUTHORITIES: Sikes Act (Public Law 86-797) and AR 200-3

CLASSIFICATION PRIORITY: Class I (DAIM-ED-N, 21 March 1997)

## Appendix E. Flora of Fort Greely and Donnelly Training Area

Nomenclature follows the University of Alaska Museum Plants Database. Names in brackets indicate synonyms used in Hulten (1968).

### **Adiantaceae [including Cryptogrammaceae]**

*Cryptogramma stelleri* (Gmel.) Prantl

### **Adoxaceae**

*Adoxa moschatellina* L.

### **Apiaceae [=Umbelliferae]**

*Angelica lucida* L.

*Bupleurum triradiatum* Adams ssp. *arcticum* (Regel) Hulten

*Cnidium cnidiifolium* (Turcz.) Schischk.

*Podistera macounii* (Coult. & Rose) Mathias & Constance [= *Ligusticum mutellinioides* (Crantz) Willar ssp. *alpinum* (Ledeb.) Thell.]

### **Aspleniaceae [including Athyriaceae, Aspidiaceae]**

*Cystopteris fragilis* (L.) Bernh.

*Cystopteris fragilis* (L.) Bernh. ssp. *dickieana* (Sim) Hyl.

*Cystopteris montana* (Lam.) Bernh. ex Desv.

*Dryopteris fragrans* (L.) Schott

*Gymnocarpium dryopteris* (L.) Newman

*Woodsia glabella* R. Br. ex Richards.

*Woodsia ilvensis* (L.) R. Br.

### **Asteraceae [=Compositae]**

*Achillea borealis* Bong.

*Achillea millefolium* L. sensu Hulten

*Achillea sibirica* Ledeb.

*Antennaria friesiana* (Trautv.) Ekman

*Antennaria monocephala* DC. ssp. *monocephala*

*Antennaria monocephala* DC. ssp. *philonipha* (A. Porsild) Hulten

*Arnica angustifolia* M. Vahl [= *Arnica alpina* (L.) Olin ssp. *angustifolia* (M. Vahl) Maguire]

*Arnica griscomii* Fern. ssp. *frigida* (C.A. Mey. ex Iljin) S.J. Wolf [= *Arnica frigida* C.A. Mey. ex Iljin]

*Arnica lessingii* (Torr. & Gray) Greene

*Artemisia alaskana* Rydb.

*Artemisia arctica* Less.

*Artemisia borealis* Pallas

*Artemisia frigida* Willd.

*Artemisia globularia* Cham. ex Bess.

*Artemisia laciniata* Willd.

*Artemisia tilesii* Ledeb. ssp. *elator* (Torr. & Gray) Hulten

*Aster sibiricus* L.

*Crepis elegans* Hook.

*Crepis nana* Richards.

*Erigeron acris* L.

*Erigeron caespitosus* Nutt.

*Erigeron elatus* E. Greene

*Erigeron eriocephalus* J. Vahl

*Erigeron glabellus* Nutt. ssp. *pubescens* (Hook.) Cronq.  
*Erigeron humilis* Graham  
*Erigeron lonchophyllus* Hook.  
*Erigeron purpuratus* Greene  
*Gnaphalium uliginosum* L.  
*Matricaria matricarioides* (Less.) Porter  
*Petasites frigidus* (L.) Fries  
*Petasites sagittatus* (Banks ex Pursh) Gray  
*Saussurea angustifolia* (Willd.) DC. (including one specimen that fits *Saussurea viscida* Hulten var. *yukonensis* (Pors.) sensu Hulten)  
*Senecio atropurpureus* (Ledeb.) Fedtsch.  
*Senecio congestus* (R. Br.) DC.  
*Senecio kjellmannii* [= *Senecio atropurpureus* (Ledeb.) Fedtsch. ssp. *tomentosus* (Kjellm.) Hulten]  
*Senecio lugens* Richards.  
*Senecio ogotorukensis* Packer [= *Senecio conterminus* Greenm.]  
*Senecio pauciflorus* Pursh  
*Senecio pauperculus* Michx.  
*Senecio resedifolius* Less.  
*Senecio tundricola* Tolm. [= *Senecio fuscatus* (Jord. & Fourr.) Hayek]  
*Senecio yukonensis* Porsild  
*Solidago decumbens* Greene var. *oreophila* (Rydb.) Fern.  
*Solidago multiradiata* Ait.  
*Taraxacum kamtschaticum* Dahlst.  
*Taraxacum lacerum* E. Greene

### **Betulaceae**

*Alnus sinuata* (Regel) Rydb. [= *Alnus crispa* (Ait.) Pursh ssp. *sinuata* (Regel) Hulten]  
*Alnus tenuifolia* Nutt. [= *Alnus incana* (L.) Moench ssp. *tenuifolia* (Nutt.) Breitung]  
*Alnus viridis* Vill. ssp. *crispa* (Ait.) A. Love & D. Love [= *Alnus crispa* (Ait.) Pursh ssp. *crispa*]  
*Betula glandulosa* Michx.  
*Betula hybrid*  
*Betula nana* L.  
*Betula neoalaskana* Sarg. [= *Betula papyrifera* Marsh. ssp. *humilis* (Regel) Hulten]  
*Betula papyrifera* Marsh.

### **Boraginaceae**

*Eritrichium splendens* Kearney  
*Mertensia paniculata* (Ait.) G. Don  
*Myosotis alpestris* F.W. Schmidt ssp. *asiatica* Vestergr.

### **Brassicaceae [=Cruciferae]**

*Arabis hirsuta* (L.) Scop. ssp. *pycnocarpa* (M. Hopk.) Hulten  
*Arabis lyrata* L. ssp. *kamchatica* (Fisch.) Hulten  
*Barbarea orthoceras* Ledeb.  
*Cardamine bellidifolia* L.  
*Cardamine purpurea* Cham. & Schlecht.  
*Cardamine umbellata* E. Greene  
*Descurainia richardsonii* (Sweet) O. Schulz  
*Descurainia sophioides* (Fisch. ex Hook.) O.E. Schulz  
*Draba alpina* L. complex  
*Draba cana* Rydb. [= *Draba lanceolata* Royle]

*Draba glabella* Pursh var. *glabella* Pursh [= *Draba hirta* L.]  
*Draba incerta* Payson  
*Draba lonchocarpa* Rydb. var. *lonchocarpa*  
*Draba longipes* Raup  
*Draba nivalis* Lilj.  
*Draba stenopetala* Trautv.  
*Erysimum cheiranthoides* L.  
*Eutrema edwardsii* R. Br.  
*Lepidium densiflorum* Schrad.  
*Lesquerella arctica* (Wormsk. ex Hornem.) S. Wats.  
*Parrya nudicaulis* (L.) Boiss.  
*Rorippa barbareaefolia* (DC.) Kitigawa [= *Rorippa hispida* (Desv.) Britt. var. *barbareaefolia* (DC.) Hulten]  
*Rorippa palustris* (L.) Besser ssp. *glabra* (O. Schulz) Stuckey [= *Rorippa islandica* (Oeder) Borb. ssp. *fernaldiana* (Butt. & Abbe) Hulten]  
*Subularia aquatica* L.  
*Torularia humilis* (C. Meyer) O. Schulz [= *Braya humilis* (C. A. Mey.) B.L. Robins.]

### **Callitrichaceae**

*Callitriche hermaphroditica* L.  
*Callitriche verna* L. emend. Kutz.

### **Campanulaceae**

*Campanula lasiocarpa* Cham. ssp. *lasiocarpa*  
*Campanula uniflora* L.

### **Caprifoliaceae**

*Linnaea borealis* L. ssp. *americanus* (J. Forbes) Hulten  
*Linnaea borealis* L. ssp. *borealis* L.  
*Viburnum edule* (Michx.) Raf.

### **Caryophyllaceae**

*Arenaria capillaris* Poir.  
*Cerastium beeringianum* Cham. & Schlecht.  
*Cerastium beeringianum* Cham. & Schlecht. var. *beeringianum*  
*Cerastium fontanum* Baumg.  
*Gastrollychnis affinis* (J. Vahl) Tolm. & Koznanch. [= *Melandrium affine* J. Vahl]  
*Gastrollychnis apetala* (L.) Tolm. & Kozhanch. [= *Melandrium apetalum* (L.) Fenzl ssp. *arcticum* (E. Fries) Hulten]  
*Gastrollychnis ostenfeldii* (A. Pors.) D. Murray [= *Melandrium taimyrense* Tolm.]  
*Minuartia arctica* (Stev. ex Ser.) Graebn.  
*Minuartia dawsonensis* (Britt.) House  
*Minuartia macrocarpa* (Pursh) Ostenf.  
*Minuartia obtusiloba* (Rydb.) House  
*Minuartia rossii* (R. Br.) Graebn.  
*Minuartia rubella* (Wahlenb.) Hiern  
*Moehringia lateriflora* (L.) Fenzl  
*Sagina nivalis* (Lindbl.) Fries [= *Sagina intermedia* Fenzl]  
*Silene acaulis* (L.) Jacq.  
*Silene repens* Patrin ex Pers.  
*Silene williamsii* Britt. [= *Silene menziesii* Hook. ssp. *williamsii* (Britt.) Hulten]  
*Stellaria alaskana* Hulten

*Stellaria borealis* Bigelow  
*Stellaria calycantha* (Ledeb.) Bong.  
*Stellaria crassifolia* Ehrh.  
*Stellaria edwardsii* R. Br.  
*Stellaria laeta* Richardson  
*Stellaria longifolia* Muhl. ex Willd.  
*Stellaria longipes* Goldie  
*Wilhelmsia physodes* (Fisch.) McNeill

### **Chenopodiaceae**

*Chenopodium album* L.  
*Chenopodium capitatum* (L.) Aschers.

### **Cornaceae**

*Cornus canadensis* L.

### **Crassulaceae**

*Rhodiola integrifolia* Raf. [= *Sedum rosea* (L.) Scop. ssp. *integrifolium* (Raf.) Hulten]

### **Cupressaceae**

*Juniperus communis* L. ssp. *nana* (Willd.) Syme

### **Cyperaceae**

*Carex aenea* Fern.  
*Carex aquatilis* Wahlenb.  
*Carex aquatilis* Wahlenb. ssp. *aquatilis*  
*Carex arcta* Boott  
*Carex atherodes* Spreng.  
*Carex atratiformis* Britt. ssp. *raymondii* (Calder) Pors. [= *Carex raymondii* Calder]  
*Carex aurea* Nutt.  
*Carex bicolor* Bellardi ex All.  
*Carex bigelowii* Torr. ex Schwein.  
*Carex canescens* L.  
*Carex capillaris* L.  
*Carex capitata* L.  
*Carex concinna* R. Br.  
*Carex crawfordii* Fern.  
*Carex cf. deweyana* Schwein.  
*Carex diandra* Schrank  
*Carex disperma* Dew.  
*Carex eburnea* Boott  
*Carex filifolia* Nutt.  
*Carex garberi* Fern. ssp. *bifaria* (Fern.) Hulten  
*Carex gynocrates* Wormsk. ex Drej. [= *Carex dioica* L. ssp. *gynocrates* (Wormsk.) Hulten]  
*Carex kelloggii* W. Boott  
*Carex krausei* Boeckl.  
*Carex lachenalii* Schkuhr.  
*Carex limosa* L.  
*Carex livida* (Wahlenb.) Willd.  
*Carex lugens* Holm  
*Carex macloviana* d 'Urv. [= *Carex macloviana* d 'Urv. ssp. *pachystachya* (Cham.) Hulten]



*Carex magellanica* Lam. ssp. *irrigua* (Wahlenb.) Hulten  
*Carex media* R. Br.  
*Carex membranacea* Hook.  
*Carex microchaeta* Holm  
*Carex microchaeta* Holm ssp. *microchaeta*  
*Carex microchaeta* Holm ssp. *nesophila* (Holm) D. Murray  
*Carex microglochin* Wahlenb.  
*Carex oederi* Retz. ssp. *viridula* (Michx.) Hulten  
*Carex petricosa* Dewey  
*Carex podocarpa* R. Br.  
*Carex rostrata* Stokes  
*Carex rotundata* Wahlenb.  
*Carex cf. rotundata* Wahlenb.  
*Carex rupestris* All.  
*Carex saxatilis* L. ssp. *laxa* (Trautv.) Kalela  
*Carex scirpoidea* Michx.  
*Carex supina* Willd. ex Wahlenb. var. *spaniocarpa* (Steud.) Boivin  
*Carex sychnocephala* Carey  
*Carex tenuiflora* Wahlenb.  
*Carex utriculata* Boott [= *Carex rhynchophysa* C.A. Meyer]  
*Carex vaginata* Tausch  
*Carex williamsii* Britt.  
*Eleocharis acicularis* (L.) Roem. & Schult  
*Eleocharis palustris* (L.) Roem. & Schult.  
*Eriophorum angustifolium* Honck. ssp. *subarcticum* (Vassiljev) Hulten  
*Eriophorum brachyantherum* Trautv. & C.A. Mey.  
*Eriophorum gracile* W.D.J. Koch  
*Eriophorum russeolum* Fries  
*Eriophorum scheuchzeri* Hoppe  
*Eriophorum scheuchzeri* Hoppe var. *tenuifolium* Ohwi  
*Eriophorum vaginatum* L.  
*Kobresia myosuroides* (Vill.) Fiori  
*Scirpus validus* M. Vahl  
*Trichophorum caespitosum* (L.) Hartman

### **Diapensiaceae**

*Diapensia lapponica* L. ssp. *obovata* (F. Schm.) Hulten

### **Droseraceae**

*Drosera rotundifolia* L.

### **Elaeagnaceae**

*Elaeagnus commutata* Bernh. ex Rydb.

*Shepherdia canadensis* (L.) Nutt.

### **Empetraceae**

*Empetrum hermaphroditum* Lange ex Hagerup [= *Empetrum nigrum* L. ssp. *hermaphroditum* (Lange ex Hagerup) Bocher]

### **Equisetaceae**

*Equisetum arvense* L.

*Equisetum fluviatile* L. ampl Ehrh.  
*Equisetum palustre* L.  
*Equisetum pratense* Ehrh.  
*Equisetum scirpoides* Michx.  
*Equisetum silvaticum* L.  
*Equisetum variegatum* Schleich. ex F. Weber & D.M.H. Mohr

### **Ericaceae**

*Andromeda polifolia* L.  
*Arctostaphylos uva-ursi* (L.) Spreng. var *uva-ursi*  
*Arctous alpina* (L.) Niedenzu [= *Arctostaphylos alpina* (L.) Spreng.]  
*Arctous rubra* [= *Arctostaphylos rubra* (Rehd. & Wilson) Fern.]  
*Cassiope tetragona* (L.) D. Don ssp. *tetragona*  
*Chamaedaphne calyculata* (L.) Moench  
*Ledum groenlandicum* Oeder [= *Ledum palustre* L. ssp. *groenlandicum* (Oeder) Hulten]  
*Ledum palustre* L. ssp. *decumbens* (Ait.) Hulten  
*Loiseleuria procumbens* (L.) Desv.  
*Oxycoccus microcarpus* Turcz.  
*Rhododendron lapponicum* (L.) Wahlenb.  
*Vaccinium uliginosum* L.  
*Vaccinium vitis-idaea* L. ssp. *minus* (Lodd.) Hulten

### **Fabaceae [=Leguminosae]**

*Astragalus adsurgens* Pallas ssp. *viciifolius* (Hulten) Welsh  
*Astragalus alpinus* L.  
*Astragalus americanus* (Hook.) M.E. Jones  
*Astragalus bodinii* Sheldon  
*Astragalus eucosmus* Robins. ssp. *eucosmus*  
*Astragalus umbellatus* Bunge  
*Astragalus williamsii* Rydb.  
*Hedysarum alpinum* L.  
*Hedysarum hedysaroides* (L.) Schinz & Thell.  
*Hedysarum mackenzii* Richards.  
*Lupinus arcticus* S. Wats.  
*Oxytropis bryophila* (E. Greene) Yurtsev [= *Oxytropis nigrescens* (Pallas) Fisch. ex DC. ssp. *bryophila*]  
*Oxytropis deflexa* (Pallas) DC. var. *foliolosa* (Hook.) Barneby  
*Oxytropis deflexa* (Pallas) DC. var. *sericea* Torr. & Gray  
*Oxytropis maydelliana* Trautv.  
*Oxytropis varians* (Rydb.) Schumann [= *Oxytropis campestris* (L.) DC. ssp. *gracilis* (Nels.) Hulten]  
*Oxytropis viscida* Nutt.  
*Trifolium hybridum* L.

### **Fumariaceae**

*Corydalis sempervirens* (L.) Pers.

### **Gentianaceae**

*Gentiana algida* Pall.  
*Gentiana glauca* Pallas  
*Gentiana prostrata* Haenke  
*Gentianella propinqua* (Richards.) J. Gillett ssp. *propinqua* (Richards.) J. Gillett [= *Gentiana propinqua* Richards. ssp. *propinqua*]

*Gentianopsis detonsa* (Rottb.) Ma ssp. *yukonensis* (J. Gillett) J. Gillett [= *Gentiana barbata* Froel.]  
*Lomatogonium rotatum* (L.) Fries ex Fern.

**Grossulariaceae [=Saxifragaceae, in part]**

*Ribes hudsonianum* Richards.  
*Ribes triste* Pallas

**Haloragaceae**

*Hippuris vulgaris* L.  
*Myriophyllum sibiricum* Kom. [= *Myriophyllum spicatum* L.]

**Iridaceae**

*Iris setosa* Pallas ex Link var. *interior* E.Anders.  
*Sisyrinchium montanum* Greene

**Isoetaceae**

*Isoetes echinospora* Durieu [= *Isoetes muricata* Dur. var. *braunii* auct.]

**Juncaceae**

*Juncus alpinus* Vill.  
*Juncus arcticus* Willd. ssp. *alaskanus* Hulten  
*Juncus arcticus* Willd. ssp. *ater* (Rydb.) Hulten  
*Juncus biglumis* L.  
*Juncus bufonius* L.  
*Juncus castaneus* Sm. ssp. *castaneus*  
*Juncus castaneus* Sm. ssp. *leucochlamys* (Zing. ex Krecz.) Hulten  
*Juncus filiformis* L.  
*Juncus triglumis* L. ssp. *albescens* (Lange) Hulten  
*Luzula arcuata* (Wahlenb.) Sw. ssp. *arcuata* (Wahlenb.) Sw.  
*Luzula confusa* Lindeberg  
*Luzula multiflora* (Retz.) Lej. ssp. *multiflora* var. *frigida* (Buch.) Sam.  
*Luzula parviflora* (Ehrh.) Desv.  
*Luzula rufescens* Fisch. ex E. Mey.  
*Luzula spicata* (L.) DC.  
*Luzula tundricola* Gorodk.

**Juncaginaceae**

*Triglochin palustre* L.

**Lamiaceae**

*Dracocephalum parviflorum* Nutt.

**Lentibulariaceae**

*Pinguicula villosa* L.  
*Pinguicula vulgaris* L.  
*Utricularia intermedia* Hayne  
*Utricularia minor* L.  
*Utricularia vulgaris* L. ssp. *macrorhiza* (Le Conte) R.T. Clausen

**Liliaceae**

*Allium schoenoprasum* L.

*Lloydia serotina* (L.) Reichenb.  
*Tofieldia coccinea* Richards.  
*Tofieldia pusilla* (Michx.) Pers.  
*Zigadenus elegans* Pursh

### **Linaceae**

*Linum lewisii* Pursh [= *Linum perenne* L. ssp. *lewisii* (Pursh) Hulten]

### **Lycopodiaceae**

*Diphasiastrum alpinum* (L.) Holub [= *Lycopodium alpinum* L.]  
*Diphasiastrum complanatum* (L.) Holub [= *Lycopodium complanatum* L.]  
*Huperzia selago* (L.) Bernh. ex Mart. & Schrank [= *Lycopodium selago* L. ssp. *appressum* (Desv.) Hulten,  
*Huperzia haleakalensis* (Breck.) Holub in FNA (1993)]  
*Lycopodium annotinum* L. ssp. *annotinum*  
*Lycopodium annotinum* L. ssp. *pungens* (LA Pyl.) Hult  
*Lycopodium clavatum* L. var. *monostachyon* Grev. & Hook.

### **Myricaceae**

*Myrica gale* L.

### **Nymphaeaceae**

*Nuphar polysepalum* Engelm.

### **Onagraceae**

*Epilobium angustifolium* L.  
*Epilobium ciliatum* Raf. ssp. *adenocaulon* (Haussk.) Hoch & Raven [= *Epilobium adenocaulon* Haussk.]  
*Epilobium hornemannii* Rchb. ssp. *hornemannii*  
*Epilobium latifolium* L.  
*Epilobium palustre* L.

### **Ophioglossaceae**

*Botrychium lunaria* (L.) Sw.

### **Orchidaceae**

*Calypso bulbosa* (L.) Oakes  
*Corallorrhiza trifida* Chatelain  
*Cypripedium guttatum* Sw.  
*Cypripedium passerinum* Richards.  
*Goodyera repens* (L.) R. Br. ex Ait. f.  
*Platanthera hyperborea* (L.) Lindl.  
*Platanthera obtusata* (Banks ex Pursh) Lindl.  
*Spiranthes romanzoffiana* Cham.

### **Orobanchaceae**

*Boschniakia rossica* (Cham. & Schlecht.) Fedtsch.

### **Papaveraceae**

*Papaver macounii* Greene  
*Papaver radicatum* Rottb. ssp. *radicatum* [= *Papaver lapponicum* (Tolm.) Nordh. ssp. *occidentale*  
(Lundstr.) Knaben]

## **Pinaceae**

*Larix laricina* (Du Roi) K.Koch

*Picea glauca* (Moench) Voss

*Picea mariana* (P. Mill.) B.S.P.

## **Plantaginaceae**

*Plantago canescens* M.F. Adams

*Plantago major* L.

## **Poaceae [=Graminae]**

*Agrostis scabra* Willd.

*Alopecurus aequalis* Sobol.

*Arctagrostis latifolia* (R. Br. ) Griseb. ssp. *arundinacea* (Trin.) Tzvelev

*Arctagrostis latifolia* (R. Br. ) Griseb. ssp. *latifolia* (R. Br. ) Griseb.

*Arctophila fulva* (Trin.) Rupr.ex Anderss.

*Avena sativa* L.

*Beckmannia erucaeformis* (L.) Host ssp. *baicalensis* (Kuzn.) Hulten

*Bromopsis inermis* (Leyss.) Holub [=*Bromus inermis* Leyss.]

*Bromopsis pumpelliana* (Scribn.) Holub ssp. *pumpellianus* [=*Bromus pumpellianus* Scribn. var. *pumpellianus*]

*Calamagrostis canadensis* (Michx.) Beauv.

*Calamagrostis canadensis* (Michx.) Beauv. ssp. *canadensis*

*Calamagrostis inexpansa* Gray

*Calamagrostis purpurascens* R. Br.

*Deschampsia cespitosa* (L.) Beauv.

*Elymus alaskanus* (Scribn. & Merr.) A. Love ssp. *hyperarcticus* (Polunin) A. Love & D. Love  
[= *Agropyron boreale* (Turcz.) Drobov ssp. *hyparcticum* (Polunin) Melderis]

*Elymus* cf. *macrourus* (Turcz.) Tzvelev [= *Agropyron macrourum* (Turcz.) Drobov]

*Elymus trachycaulus* (Link) Gould ex Shinnars cf. ssp. *subsecundus* (Link) Gould [= *Agropyron subsecundum* (Link) Hitchc.]

*Elymus trachycaulus* (Link) Gould ex Shinnars ssp. *trachycaulus* [= *Agropyron pauciflorum* (Schwein.) Hitchc.]

*Elymus trachycaulus* (Link) Gould ex Shinnars ssp. *violaceus* (Hornem.) A. & D. Love [= *Agropyron violaceum* (Hornem.) Lange]

*Elytrigia repens* (L.) Beauv. var. *repens* [= *Agropyron repens* (L.) Beauv.]

*Festuca altaica* Trin.

*Festuca brachyphylla* J.A. Schultes ex J.A. & J.H. Schultes

*Festuca brevissima* Yurtsev [= *Festuca ovina* L. ssp. *alaskensis* Holmen]

*Festuca rubra* L.sens lat.

*Festuca rubra* L. ssp. *richardsonii* (R. Br. ) Hulten [= *Festuca rubra* L., in part]

*Festuca saximontana* Rydb.

*Festuca vivipara* (L.) Smith [= "*Festuca vivipara* "]

*Glyceria borealis* (Nash) Batchelder

*Glyceria maxima* (Hartm.) Holmb. ssp. *grandis* (S. Wats.) Hulten

*Glyceria pulchella* (Nash) K.Schum.

*Hierochloe alpina* (Sw.) Roem. & Schult.

*Hierochloe odorata* (L.) Beauv.

*Hordeum jubatum* L.

*Leymus innovatus* (Beal) Pilger [= *Elymus innovatus* Beal]

*Phleum pratense* L.

*Poa* cf. *alpigena* (Fries) Lindman

*Poa alpina* L.  
*Poa annua* L.  
*Poa arctica* R. Br. sens lat.  
*Poa glauca* M. Vahl  
*Poa lanata* Scribn. & Merr.  
*Poa paucispicula* Scribn. & Merr.  
*Poa pratensis* L.  
*Poa pseudoabbreviata* Rosh.  
*Poa secunda* J. Presl [=includes *Poa nevadensis* Vasey, *Poa ampla* Merrill, *Poa stenantha*, in part, *Poa scabrella* (Thurb.) Benth. and *Poa canbyi* (Scribn.) Howell]  
*Trisetum spicatum* (L.) Richter

### **Polemoniaceae**

*Phlox hoodii* Richards.  
*Phlox sibirica* L. ssp. *richardsonii* (Hook.) Hulten  
*Polemonium acutiflorum* Willd. ex Roemer & J.A. Schultes  
*Polemonium pulcherrimum* Hook.

### **Polygonaceae**

*Bistorta plumosa* (Small) E. Greene [= *Polygonum bistorta* L. ssp. *plumosum* (Small) Hulten]  
*Bistorta vivipara* (L.) Gray [= *Polygonum viviparum* L.]  
*Oxyria digyna* (L.) Hill  
*Polygonum alaskanum* (Small) W. Wight  
*Polygonum amphibium* L.  
*Polygonum aviculare* L.  
*Polygonum pennsylvanicum* L. ssp. *oneillii* (Brenckle) Hulten  
*Rumex arcticus* Trautv.  
*Rumex longifolius* DC.  
*Rumex maritimus* L. ssp. *fueginus* (L. Phillips) Hulten  
*Rumex maritimus* L. ssp. *maritimus*

### **Portulacaceae**

*Claytonia sarmentosa* C.A. Mey.  
*Claytonia tuberosa* Pallas ex J.A. Schultes

### **Potamogetonaceae**

*Potamogeton alpinus* Balbis  
*Potamogeton filiformis* Pers.  
*Potamogeton foliosus* Raf.  
*Potamogeton gramineus* L.  
*Potamogeton obtusifolius* Mertens & Koch  
*Potamogeton praelongus* Wulfen  
*Potamogeton pusillus* L. [= *Potamogeton berchtoldii* Fieb.]  
*Potamogeton richardsonii* (Benn.) Rydb. [= *Potamogeton perfoliatus* L. ssp. *richardsonii* (Bennett) Hulten]  
*Potamogeton zosteriformis* Fern. [= *Potamogeton zosterifolius* Schum. ssp. *zosteriformis* (Fern.) Hulten]

### **Primulaceae**

*Androsace chamaejasme* Wulfen ssp. *lehmanniana* (Spreng.) Hulten  
*Androsace septentrionalis* L.  
*Dodecatheon frigidum* Cham. & Schlecht.

*Dodecatheon pulchellum* (Raf.) Merr. ssp. *pauciflorum* (E. Greene) Hulten  
*Primula cf. egaliksensis* Wormsk. ex Hornem.  
*Primula eximia* Greene [= *Primula tschuktschorum* Kjellm. var. *arctica* (Koidz.) Fern.]  
*Trientalis europaea* L. ssp. *arctica* (Fisch. ex Hook.) Hulten

### **Pyrolaceae**

*Moneses uniflora* (L.) Gray  
*Orthilia secunda* (L.) House [= *Pyrola secunda* L.]  
*Pyrola asarifolia* Michx.  
*Pyrola chlorantha* Sw.  
*Pyrola grandiflora* Radius  
*Pyrola minor* L.

### **Ranunculaceae**

*Aconitum delphinifolium* DC. ssp. *delphinifolium*  
*Actaea rubra* (Ait.) Willd.  
*Anemone drummondii* S. Wats.  
*Anemone narcissiflora* L. ssp. *interior* Hulten  
*Anemone parviflora* Michx.  
*Anemone richardsonii* Hook.  
*Aquilegia brevistyla* Hook.  
*Delphinium glaucum* S. Wats.  
*Pulsatilla patens* (L.) P. Mill. ssp. *multifida* (Pritz.) Zamels  
*Ranunculus gmelini* DC. ssp. *gmelini*  
*Ranunculus hyperboreus* Rottb.  
*Ranunculus lapponicus* L.  
*Ranunculus nivalis* L.  
*Ranunculus reptans* L.  
*Ranunculus sceleratus* L. ssp. *multifidus* (Nutt.) Hulten  
*Ranunculus trichophyllus* Chaix  
*Thalictrum alpinum* L.  
*Thalictrum sparsiflorum* Turcz. ex Fisch. & C.A. Mey.

### **Rosaceae**

*Acomastylis rossii* (R. Br. ) E. Greene [= *Geum rossii* (R. Br. ) Ser.]  
*Comarum palustre* L. [= *Potentilla palustris* (L.) Scop.]  
*Dryas alaskensis* A. Porsild [= *Dryas octopetala* L. ssp. *alaskensis* (Porsild) Hulten]  
*Dryas drummondii* Richards. ex Hook.  
*Dryas integrifolia* Vahl  
*Dryas octopetala* L.  
*Dryas octopetala* L. ssp. *octopetala* var. *octopetala*  
*Fragaria virginiana* Duchesne ssp. *glaucula* (S. Wats.) Staudt  
*Geum perincisum* Rydb. [= *Geum macrophyllum* Willd. var. *perincisum* (Rydb.) Raup]  
*Pentaphylloides floribunda* (Pursh) A. Love [= *Potentilla fruticosa* L.]  
*Potentilla anserina* L.  
*Potentilla biflora* Willd. ex Schlecht.  
*Potentilla hookeriana* Lehm.  
*Potentilla multifida* L.  
*Potentilla norvegica* L. ssp. *monspeliensis* (L.) Ashers. & Graebn.  
*Potentilla pensylvanica* L.  
*Potentilla uniflora* Ledeb.

*Potentilla virgulata* A. Nels.  
*Rosa acicularis* Lindl.  
*Rubus arcticus* L.ssp. *arcticus* L.  
*Rubus chamaemorus* L.  
*Rubus idaeus* L.  
*Sanguisorba officinalis* L.  
*Sanguisorba stipulata* Raf.  
*Spiraea stevenii* (Schneid.) Rydb. [= *Spiraea beauverdiana* Schneid.]

### **Rubiaceae**

*Galium boreale* L.  
*Galium brandegei* A. Gray  
*Galium trifidum* L. ssp. *trifidum*

### **Salicaceae**

*Populus balsamifera* L. ssp. *balsamifera*  
*Populus tremuloides* Michx.  
*Salix alaxensis* (Anderss.) Coville var. *alaxensis* (Anderss.) Coville  
*Salix alaxensis* (Anderss.) Coville var. *longistylis* (Rydb.) Schneid.  
*Salix arbusculoides* Anderss.  
*Salix arctica* Pall.  
*Salix barclayi* Anderss.  
*Salix bebbiana* Sarg. [= *Salix depressa* L. ssp. *rostrata* (Anderss.) Hiitonen]  
*Salix brachycarpa* Nutt. ssp. *niphoclada* (Rydb.) Argus  
*Salix fuscescens* Anderss.  
*Salix glauca* L.  
*Salix glauca* L. var. *acutifolia* (Andersson) C. Schneider  
*Salix lanata* L. ssp. *richardsonii* (Hook.) A. Skvortsov  
*Salix myrtillofolia* Anderss.  
*Salix novae-angliae* Anderss. [= *Salix myrtillofolia* Anderss., in part]  
*Salix planifolia* Pursh ssp. *pulchra* (Cham.) Argus  
*Salix polaris* Wahlenb. ssp. *pseudopolaris* (Flod.) Hulten  
*Salix reticulata* L.  
*Salix rotundifolia* Trautv. ssp. *dodgeana* (Rydb.) Argus [= *Salix dodgeana* Rydb.]  
*Salix setchelliana* Ball

### **Santalaceae**

*Geocaulon lividum* (Richards.) Fern.

### **Saxifragaceae**

*Boykinia richardsonii* (Hook.) Rothrock  
*Chrysosplenium tetrandrum* (Lund) Th. Fries  
*Chrysosplenium wrightii* Franch. & Savigny  
*Parnassia kotzebuei* Cham.ex Spreng.  
*Parnassia palustris* L. ssp. *neogaea* (Fern.) Hulten  
*Saxifraga cf.adscendens* L. ssp. *oregonensis* (Raf.) Bacig.  
*Saxifraga bronchialis* L.  
*Saxifraga calycina* Sternb.[= *Saxifraga davurica* Willd. ssp. *grandipetala* (Engler & Irmsch) Hulten]  
*Saxifraga cernua* L.  
*Saxifraga eschscholtzii* Sternb.  
*Saxifraga flagellaris* Willd. ex Sternb.



*Saxifraga hieraciifolia* Waldst. & Kit  
*Saxifraga hirculus* L.  
*Saxifraga nelsoniana* D. Don [= *Saxifraga punctata* L.]  
*Saxifraga oppositifolia* L.  
*Saxifraga reflexa* Hook.  
*Saxifraga rivularis* L.  
*Saxifraga serpyllifolia* Pursh  
*Saxifraga spicata* D. Don  
*Saxifraga tricuspidata* Rottb.

### **Scrophulariaceae**

*Castilleja caudata* (Pennell) Rebr.  
*Castilleja yukonis* Pennell  
*Euphrasia disjuncta* Fern. & Wieg.  
*Lagotis glauca* Gaertn.  
*Pedicularis capitata* M.F. Adams  
*Pedicularis labradorica* Wirsing  
*Pedicularis lanata* Cham. & Schlecht. [= *Pedicularis kanei* Durand]  
*Pedicularis langsдорфii* Fisch. ex Stev.  
*Pedicularis sudetica* Willd.  
*Pedicularis verticillata* L.  
*Rhinanthus minor* L. ssp. *borealis* (Sterneck) Love  
*Synthyris borealis* Pennell  
*Veronica peregrina* L. ssp. *xalapensis* (Kunth) Pennell  
*Veronica wormskjoldii* Roemer & J.A. Schultes

### **Selaginellaceae**

*Selaginella sibirica* (Milde) Hieron.

### **Sparganiaceae**

*Sparganium angustifolium* Michx.  
*Sparganium hyperboreum* Laestad. ex Beurling  
*Sparganium minimum* (Hartman F.) Fries

### **Valerianaceae**

*Valeriana capitata* Pallas ex Link

### **Violaceae**

*Viola biflora* L.  
*Viola epipsila* Ledeb.  
*Viola selkirkii* Pursh ex Goldie

Source: Racine et al., 2001. *An Inventory of the Vascular Flora of Fort Greely, Interior Alaska.*

## Appendix F. Fauna of Fort Greely and Donnelly Training Area

**Mammals.** This list includes confirmed species on Fort Greely and Donnelly Training Area.

<u>Scientific Name</u>	<u>Common Name</u>	<u>Habitat</u>
<i>Microtus miurus</i>	Alaska/singing vole	slopes
<i>Microtus pennsylvanicus</i>	meadow vole	meadow
<i>Microtus oeconomus</i>	tundra vole	alpine
<i>Microtus xanthognathus</i>	yellow-cheeked vole	spruce forests
<i>Microtus longicaudus</i>	longtail vole	moist meadows, muskeg
<i>Clethrionomys rutilus</i>	redback tundra vole	alpine, forest
<i>Lemmus trimucronatus</i>	brown lemming	alpine
<i>Synaptomys borealis</i>	northern bog lemming	wet alpine tundra, muskeg
<i>Peromyscus maniculatus</i>	deer mouse	dry forest, grassland
<i>Zapus hudsonicus</i>	meadow jumping mouse	moist meadows
<i>Sorex hoyi</i>	pygmy shrew	forest, grassland
<i>Sorex monticulus</i>	dusky shrew	muskeg, forest
<i>Sorex cinereus</i>	masked shrew	subalpine
<i>Sorex tundrensis</i>	tundra shrew	tamarack and spruce swamps
<i>Myotis lucifugus</i>	little brown bat	wooded areas, buildings
<i>Mustela erminea</i>	shorttail weasel (ermine)	forest, brush
<i>Mustela nivalis</i>	least weasel	brush
<i>Mustela vison</i>	mink	near water
<i>Marmota caligata</i>	hoary marmot	alpine
<i>Marmota monax</i>	woodchuck	open grassland
<i>Lontra canadensis</i>	river otter	near water
<i>Lepus americanus</i>	snowshoe hare	forest, brush
<i>Ondatra zibethicus</i>	muskrat	near water, marsh
<i>Spermophilus parryi</i>	Arctic ground squirrel	alpine
<i>Erethizon dorsatum</i>	porcupine	coniferous forest
<i>Ochotona collaris</i>	collared pika	Donnelly Dome
<i>Tamiasciurus hudsonicus</i>	red squirrel	spruce forest
<i>Glaucomys sabrinus</i>	northern flying squirrel	some in nest boxes and forest
<i>Castor canadensis</i>	beaver	streams
<i>Martes americana</i>	marten	spruce forest
<i>Gulo gulo</i>	wolverine	subalpine, forest
<i>Ursus arctos</i>	brown (grizzly) bear	alpine, subalpine
<i>Ursus americanus</i>	black bear	forests
<i>Canis latrans</i>	coyote	ubiquitous
<i>Canis lupus</i>	gray wolf	alpine, forest, muskeg
<i>Vulpes vulpes</i>	red fox	ubiquitous
<i>Lynx canadensis</i>	lynx	forest, muskeg
<i>Ovis dalli</i>	Dall sheep	alpine
<i>Bison bison</i>	bison	grassland, river bars, ag areas
<i>Rangifer tarandus</i>	caribou	tundra, open forest
<i>Alces alces</i>	moose	brush, forest

Sources: Anonymous. 1979. *Draft Environmental Impact Statement Concerning Installation Utilization for 172nd Infantry Brigade Alaska, at Fort Greely and Donnelly Training Area.*

Appendix E.

Summers. 1980. *Small Mammals Survey on Fort Greely and Donnelly Training Area, Alaska.*

Anderson et. al. 2000

Unpublished Fort Greely and Donnelly Training Area data.

**Fish:**

<u>Scientific Name</u>	<u>Common Name</u>
<i>Lampetra japonica</i>	Arctic lamprey
<i>Stenodus leucichthys nelma</i>	sheefish
<i>Coregonus pidschian</i>	humpback whitefish
<i>Prosopium cylindraceum</i>	round whitefish
<i>Oncorhynchus keta</i>	chum salmon
<i>Oncorhynchus kisutch</i>	coho salmon
<i>Oncorhynchus tshawytscha</i>	chinook salmon (stocked)
<i>Oncorhynchus mykiss</i>	rainbow trout (stocked)
<i>Salvelinus namaycush</i>	lake trout (stocked)
<i>Esox lucius</i>	northern pike
<i>Couesius plumbeus</i>	lake chub
<i>Catostomus catostomus</i>	longnose sucker
<i>Lota lota</i>	burbot
<i>Cottus cognatus</i>	slimy sculpin
<i>Thymallus arcticus</i>	Arctic grayling
<i>Salvelinus alpinus</i>	Arctic char (stocked)

Sources: Anonymous, 1979. *Draft Environmental Impact Statement Concerning Installation Utilization for 172nd Infantry Brigade Alaska, at Fort Greely and Donnelly Training Area.* Appendix E.

Unpublished Fort Greely and Donnelly Training Area data.

**Amphibians and Reptiles:**

<u>Scientific Name</u>	<u>Common Name</u>	<u>Habitat</u>
<i>Rana sylvestris</i>	wood frog	bogs, lakes, marshes

**Birds:**

<u>Scientific Name</u>	<u>Common Name</u>
LOONS, GREBES, PELICANS	
<i>Gavia immer</i>	common loon
<i>Gavia pacifica</i>	Pacific loon
<i>Gavia stellata</i>	red-throated loon
<i>Podiceps grisegena</i>	red-necked grebe
<i>Podiceps auritus</i>	horned grebe

WATERFOWL

<i>Cygnus columbianus</i>	tundra swan
---------------------------	-------------

<i>Cygnus buccinator</i>	trumpeter swan
<i>Anser albifrons</i>	greater white-fronted goose
<i>Branta canadensis</i>	Canada goose
<i>Anas platyrhynchos</i>	mallard
<i>Anas strepera</i>	gadwall
<i>Anas crecca</i>	green-winged teal
<i>Anas americana</i>	American widgeon
<i>Anas acuta</i>	northern pintail
<i>Anas clypeata</i>	northern shoveler
<i>Anas discors</i>	blue-winged teal
<i>Aythya americana</i>	redhead
<i>Aythya valisineria</i>	canvasback
<i>Aythya collaris</i>	ring-necked duck
<i>Aythya marila</i>	greater scaup
<i>Aythya affinis</i>	lesser scaup
<i>Bucephala islandica</i>	Barrows goldeneye
<i>Bucephala clangula</i>	common goldeneye
<i>Bucephala albeola</i>	bufflehead
<i>Mergus merganser</i>	common merganser
<i>Mergus serrator</i>	red-breasted merganser
<i>Clangula hyemalis</i>	long-tailed duck
<i>Histrionicus histrionicus</i>	Harlequin duck
<i>Melanitta fusca</i>	white-winged scoter
<i>Melanitta deglandi</i>	common scoter
<i>Melanitta perspicillata</i>	surf scoter

## RAPTORS

<i>Haliaeetus leucocephalus</i>	bald eagle
<i>Aquila chrysaetos</i>	golden eagle
<i>Circus cyaneus</i>	northern harrier
<i>Falco rusticolus</i>	gyrfalcon
<i>Falco peregrinus</i>	peregrine falcon
<i>Falco columbarius</i>	merlin
<i>Falco sparverius</i>	American kestrel
<i>Buteo jamaicensis</i>	red-tailed hawk
<i>Buteo lagopus</i>	rough-legged hawk
<i>Buteo jamaicensis harlani</i>	Harlan's hawk
<i>Accipiter striatus</i>	sharp-shinned hawk
<i>Accipiter gentilis</i>	northern goshawk
<i>Pandion haliaetus</i>	osprey

## OWLS

<i>Asio flammeus</i>	short-eared owl
<i>Bubo virginianus</i>	great horned owl
<i>Strix nebulosa</i>	great gray owl
<i>Surnia ulula</i>	northern hawk owl
<i>Nyctea scandiaca</i>	snowy owl
<i>Aegolius funereus</i>	boreal owl

## GALLINACEOUS BIRDS

<i>Lagopus lagopus</i>	willow ptarmigan
<i>Lagopus mutus</i>	rock ptarmigan
<i>Lagopus leucurus</i>	white-tailed ptarmigan
<i>Falcipennis canadensis</i>	spruce grouse
<i>Bonasa umbellus</i>	ruffed grouse
<i>Tympanuchus phasianellus</i>	sharp-tailed grouse

## SHOREBIRDS

<i>Grus canadensis</i>	sandhill crane
<i>Fulica americana</i>	American coot
<i>Charadrius semipalmatus</i>	semipalmated plover
<i>Charadrius vociferus</i>	killdeer
<i>Pluvialis squatarola</i>	black-bellied plover
<i>Pluvialis dominica</i>	American golden plover
<i>Numenius phaeopus</i>	whimbrel
<i>Bartramia longicauda</i>	upland sandpiper
<i>Tringa flavipes</i>	lesser yellowlegs
<i>Tringa solitaria</i>	solitary sandpiper
<i>Heteroscelus incanus</i>	wandering tattler
<i>Actitis macularia</i>	spotted sandpiper
<i>Phalaropus lobatus</i>	red-necked phalarope
<i>Stercorarius longicaudus</i>	long-tailed jaeger
<i>Limnodromus scolopaceus</i>	long-billed dowitcher
<i>Gallinago gallinago</i>	common snipe
<i>Aphriza virgata</i>	surfbird
<i>Calidris pusilla</i>	semipalmated sandpiper
<i>Calidris mauri</i>	western sandpiper
<i>Calidris melanotos</i>	pectoral sandpiper
<i>Calidris bairdii</i>	Baird's sandpiper
<i>Calidris minutilla</i>	least sandpiper
<i>Calidris alpina</i>	dunlin
<i>Calidris alba</i>	sanderling

## GULLS & TERNS

<i>Larus argentatus</i>	herring gull
<i>Larus canus</i>	mew gull
<i>Sterna paradisaea</i>	Arctic tern

## DOVES

<i>Columba livia</i>	rock dove
----------------------	-----------

## KINGFISHER

<i>Ceryle alcyon</i>	belted kingfisher
----------------------	-------------------

## WOODPECKERS

<i>Picoides villosus</i>	hairy woodpecker
<i>Picoides tridactylus</i>	three-toed woodpecker
<i>Colaptes auratus</i>	northern flicker
<i>Picoides arcticus</i>	black-backed woodpecker
<i>Picoides pubescens</i>	downy woodpecker

## PASSERINES

<i>Sayornis saya</i>	Say's phoebe
<i>Empidonax alnorum</i>	alder flycatcher
<i>Contopus cooperi</i>	olive-sided flycatcher
<i>Contopus sordidulus</i>	western wood-pewee
<i>Eremophila alpestris</i>	horned lark
<i>Tachycineta bicolor</i>	tree swallow
<i>Tachycineta thalassina</i>	violet-green swallow
<i>Riparia riparia</i>	bank swallow
<i>Petrochelidon pyrrhonota</i>	cliff swallow
<i>Corvus corax</i>	common raven
<i>Perisoreus canadensis</i>	gray jay
<i>Pica pica</i>	black-billed magpie
<i>Poecile atricapillus</i>	black-capped chickadee
<i>Poecile hudsonicus</i>	boreal chickadee
<i>Troglodytes troglodytes</i>	winter wren
<i>Certhia americana</i>	brown creeper
<i>Cinclus mexicanus</i>	American dipper
<i>Turdus migratorius</i>	American robin
<i>Ixoreus naevius</i>	varied thrush
<i>Catharus guttata</i>	hermit thrush
<i>Catharus ustulatus</i>	Swainson's thrush
<i>Catharus minimus</i>	gray-cheeked thrush
<i>Myadestes townsendi</i>	Townsend's solitaire
<i>Oenanthe oenanthe</i>	wheatear
<i>Regulus calendula</i>	ruby-crowned kinglet
<i>Phylloscopus borealis</i>	Arctic warbler
<i>Anthus spinoletts</i>	American pipit
<i>Bombycilla garrulus</i>	bohemian waxwing
<i>Lanius excubitor</i>	northern shrike
<i>Vermivora celata</i>	orange-crowned warbler
<i>Dendroica petechia</i>	yellow warbler
<i>Dendroica coronata</i>	yellow-rumped warbler
<i>Dendroica striata</i>	blackpoll warbler
<i>Seiurus noveboracensis</i>	northern waterthrush
<i>Wilsonia pusilla</i>	Wilson's warbler
<i>Euphagus carolinus</i>	rusty blackbird
<i>Pinicola enucleator</i>	pine grosbeak
<i>Leucosticte tephrocotis</i>	gray-crowned rosy finch
<i>Carduelis hornemanni</i>	hoary redpoll
<i>Acanthis flammea</i>	common redpoll
<i>Carduelis pinus</i>	pine siskin

<i>Loxia leucoptera</i>	white-winged crossbill
<i>Junco hyemalis</i>	dark-eyed junco
<i>Passerculus sandwichensis</i>	savanna sparrow
<i>Spizella passerina</i>	chipping sparrow
<i>Melospiza lincolnii</i>	Lincoln's sparrow
<i>Calcarius lapponicus</i>	lapland longspur
<i>Calcarius pictus</i>	Smith's longspur
<i>Plectrophenax nivalis</i>	snow bunting
<i>Zonotrichia leucophrys</i>	white-crowned sparrow
<i>Regulus satrapa</i>	golden-crowned kinglet
<i>Spizella arborea</i>	American tree sparrow
<i>Passerella iliaca</i>	fox sparrow
<i>Zonotrichia atricapilla</i>	golden-crowned sparrow
<i>Dendroica petechia</i>	yellow warbler
<i>Dendroica townsendii</i>	Townsend's warbler

Sources: Anonymous. 1979. *Draft Environmental Impact Statement Concerning Installation Utilization for 172nd Infantry Brigade Alaska, at Fort Greely and Donnelly Training Area*. Appendix E.

Unpublished Fort Greely and Donnelly Training Area data.

## Appendix G. Federal Laws, Regulations, Executive Orders, Directives, and Policies

### Federal Laws

Americans with Disabilities Act of 1990 (PL 101-336; 42 USC 12101)

- Policy to ensure access, to the maximum extent possible, for persons with disabilities. Notes that wilderness areas are not included under this act. Some provisions are made maintaining historic structures.
- Penalties are enforced under 29 USC 794a dealing with citizen suits.

Antiquities Act of 1906 (PL 59-209; 16 USC 431-433)

- Policy providing for the preservation of historic and prehistoric sites on federal lands. Prohibits taking, excavation, or other destruction of sites.
- Penalties: Misdemeanor charges with fines up to \$500 and/or 90 days imprisonment.

Archaeological and Historic (Data) Preservation Act Of 1974 (PL 93-291; 16 USC 469 *et seq.*) (AKA Archeological Recovery Act and Reservoir Salvage Act of 1960) (PL 86-523; 16 USC 469)

- Policy to protect and preserve any historic and archaeological data collected from sites which would otherwise be lost or destroyed as a result of any federally funded or licensed activity or program. Additionally, this act provides that up to one percent of project funds may be appropriated to conduct data recovery.
- No penalties are directly associated with this act.

Archaeological Resources Protection Act of 1979 (PL 96-95; 16 USC 470aa-11)

- Policy to prohibit the sale, purchase, exchange, transport or receipt of any archeological resource if that resource was taken from public or Indian lands or in violation of state or local law. Vandalism, alteration, or destruction of historic and prehistoric sites are also covered under this act.
- Penalties - Criminal: Up to \$20,000 and/or two years imprisonment, for first offense, \$100,000 and/or five years imprisonment for second offense. Civil: Forfeiture of vehicles and equipment used in illegal activities. Forfeiture of illegally obtained artifacts.

Bald and Golden Eagle Protection Act of 1984 (16 USC 668-668d)

- This act prohibits the taking, possession, transaction, and transport of bald and golden eagles. Exemptions may be authorized by the Secretary of the Interior.
- Penalties - Criminal: Fines up to \$5,000 and/or one year imprisonment, fines and prison terms doubled for second offense. Civil: Fines up to \$5,000 per violation. Loss of federal lease rights, and confiscation of vehicles used in the violation of this law.

Clean Air Act (42 USC 7401-7642)

- Policy to prohibit, limit, and regulate the emission of dangerous and noxious pollutants into the environment.
- Penalties - Criminal: Up to \$250,000 and/or five years imprisonment for first offense. \$500,000 and/or 10 years imprisonment for second offense. Corporations are subject to fines up to \$500,000 for first offense. Knowing endangerment is punishable by fine under Title 18 and/or 15 years imprisonment for an individual and \$1,000,000 for a corporation. Penalties are doubled for second offenses.

Clean Water Act of 1977 (33 USC 1251-1387)

- This act stipulates effluent standards for the discharge of pollutants into navigable waters of the U.S. Promotes research at the federal and state levels concerning issues of water pollution.
- Penalties - Criminal: Negligent violations, fines up to \$25,000 per day of violation and/or up to one year imprisonment. Doubled for repeat offenders. Knowledgeable violations, fines up to \$50,000 per day of violation and/or up to three years imprisonment. Doubled for repeat offenders. Knowledgeable endangerment, fines up to \$230,000 and/or up to 15-year imprisonment. If violator is an organization, fines up to \$1,000,000. Doubled for repeat offenders. Civil: Accidental violation, fines up to \$50,000. Willful violation, fines up to \$250,000. Owners or operators of vessels or facilities may be liable for clean-up costs



up to the amount of \$30,000,000. Citizen Suits: Any citizen may bring suit against any person, the U.S. government, or governmental agency for violations of this act.

Coastal Zone Management Act (PL 92-583; 16 USC 1451 *et seq.*)

- Policy to preserve, protect, develop, restore, and enhance the nation's coastal zones. Provides funding opportunities to accomplish this goal. Establishes the Walter B. Jones excellence in coastal zone management awards. Also established the National Estuarine Research System.
- No penalties are directly associated with this act.

Comprehensive Environmental Response, Compensation and Liability Act (CERCLA and SARA) of 1980 (42 USC 9601-9675)

- Policy which defines liabilities for damage or destruction of the environment. The DOD can be held liable for releases damaging the environment. Limits on fines do not limit liabilities in regards to actual clean-up costs.
- Penalties - Civil fines up to \$5 million for vessels carrying hazardous wastes (\$50 million for an incineration vessel). Civil fines up to \$30 million for a motor vehicle, aircraft, pipeline, or rolling stock, but no less than \$5 million. Civil fines up to \$50 million for any facility.

Conservation and Rehabilitation Program on Military and Public Lands (PL 93-452)

- Policy to set up and maintain conservation and rehabilitation programs on military and public lands. The goal is to preserve areas for natural resources. Provides funding and policy guidance for programs. Allows for imposing fines on individuals who violate regulations for land use. \$1,000 for hunting and fishing without appropriate permit. \$500 for violation of other regulations.

Conservation Programs on Military Installations (AKA Sikes Act) (PL 86-797; 16 USC 670 *et seq.*)

- Policy to develop land areas for habitat improvement and outdoor recreation. Allows for permitting of hunting and control of off-road vehicles. No fines on military reservations.

Emergency Planning and Community-Right-to-Know Act of 1986 (42 USC 11001-11050)

- Policy to inventory and report holdings of hazardous materials. Also, to report releases of hazardous materials within specified time frames. Some limitations on liability of governmental entities.
- Penalties - Criminal: \$25,000 per day in violation, up to two years imprisonment. Civil: \$25,000 per day in violation. Citizen Suits: Any citizen may bring suit against any person, the U.S. government, or governmental agency for violation of this act.

Emergency Wetlands Resources Act of 1986 (16 USC 3901-3932)

- This act is intended to promote the conservation of wetlands and to comply with international obligations of migratory bird treaties.
- No penalties are associated with this act.

Endangered Species Act of 1973 (PL 93-205; 16 USC 1531-1543)

- Policy to protect any species (fish, wildlife, or plants) listed on the endangered species and the threatened species list from hunting, taking for importation, or exportation to or from the United States. Establishes the endangered and threatened species list.
- Penalties - Criminal: Fines up to \$25,000 and/or one year imprisonment. Civil: Fines up to \$10,000 for violation of this act. Forfeiture of any fish, wildlife, plants taken and equipment and vehicles used in violation of this act.

Environmental Quality Improvement Act of 1970 (42 USC 4371-4375)

- Establishes the Office of Environmental Quality. This office is tasked with the goal of enhancing environmental quality via research on negative human impacts on the environment. Also, responsible for coordinating various efforts of federal agencies engaged in minimizing the impact of their missions.
- No penalties are associated with this act.

Erosion Protection Act (33 USC 426e-426h)

- Provides funding mechanism for specific erosion protection projects. Each project must be approved by Congress, the Board on Coastal Engineering Research, or by the Chief of Engineers of the U.S. Army.
- No penalties are associated with is act.

#### Estuary Protection Act of 1968 (PL 90-454; 82 Stat 625; 16 USC 1221)

- Policy to protect, conserve, and restore the nation's valuable estuaries in a manner that adequately and reasonably maintains a balance between the national need for such protection of estuaries and the need for growth and development of these areas.
- No penalties are directly associated with this act.

#### Federal Facilities Compliance Act of 1992 (USC )

- This act amends the Resource Conservation and Recovery Act (RCRA, 42 USC 6961) so that the FFCA waives sovereign immunity in RCRA cases. The act allows the EPA Administrator to enforce RCRA provisions for violations by federal agencies. Requires annual inspections of federal facilities. All fees or fines assessed against any federal agency must be paid out of that agency's standard appropriation.
- No penalties are directly associated with this act.

#### Federal Insecticide, Fungicide and Rodenticide Act (7 USC 136-136y)

- Policy and relations pertaining to the usage of pesticides. Dealing mostly with applications, labeling, and banned products. Provides penalties for improper usage.
- Penalties - Criminal: Commercial - Fines up to \$25,000 and/or one year imprisonment; Private - Fines up to \$1000 and/or 30 days imprisonment. Civil: Commercial - Fines up to \$5000; Private - Fines up to \$1000.

#### Federal Land Policy and Management Act (43 USC 1701-1784)

- Policy regarding the management of federal lands.
- No penalties are directly associated with this act.

#### Federal Water Pollution Control Act (AKA Clean Water Act) (33 USC 1251-1376)

- Policy to protect U.S. water resources from pollution and to find ways to improve conditions. The act provides funding opportunities for research and development of water resources and sets standards and limits for effluent releases into water resources. Includes issues of dredge and fill, hazardous wastes, oil spills, etc.
- Penalties - Criminal: For individuals under negligence, fines range from \$2500 - \$25,000 per day of violation and/or one year imprisonment. Knowing violation fines range from \$5000 - \$50,000 per day of violation and/or three years imprisonment. Knowing endangerment fines are up to \$250,000 and/or 15 years imprisonment. Fine and prison term are doubled for second offense. For vessels, unknowing violations are \$50,000 plus clean-up costs up to \$250,000. For vessels, knowing violations are \$250,000 plus full clean-up costs. For facilities, fines up to \$50 million plus full clean-up costs for knowing violations. Civil: \$10,000 per day of violation, injunctions. Citizen suits: Any citizen may bring suit against any person, the U.S. government, or governmental agency for violations of this act.

#### Federal Water Project Recreation Act to 1965 (PL 89-72; 79 Stat 213; 16 USC 460[1]-12 to 460[1]-21)

- Policy to include recreation and fish and wildlife considerations in any water resources project. Discusses methods of funding.
- No penalties are directly associated with this act.

#### Fish and Wildlife Conservation Act of 1980 (FL 96-366; 16 USC 2901)

- Policy to promote fish and wildlife conservation. The act provides for funding of conservation programs.
- No penalties are directly associated with this act.

#### Fish and Wildlife Coordination Act (PL 85-624; 16 USC 661 *et seq.*)

- Policy to elevate the protection of wildlife resources to the status of water resource protection. Provides authority to Secretary of Interior to provide assistance to other agencies, state and local governments, and public and private organizations to develop, stock, rear, and protect all species of wildlife and their habitats. Provides specific protection for bald and golden eagles and for endangered species of fish and wildlife.

- Penalties - Criminal: Fines up to \$5000 and/or one year imprisonment. Fines and prison terms are doubled for second offense. Civil: Fines up to \$5000 per offense, each violation is considered a second offense.

Forest and Rangeland Renewable Resources Planning Act of 1974 (16 USC 1601 *et seq.*)

- Policy for forest and rangeland management.
- No penalties are directly associated with this act.

Hazardous Materials Transportation Act (42 USC 1801 *et seq.* changed title to 49 USC 1471)

- Policy to restrict the transportation of hazardous materials.
- Penalties - Criminal: Fines up to \$25,000 and/or five years imprisonment. Civil: Fines up to \$50,000.

Historic Sites Act of 1935 (PL 74-292; 16 USC 461-467)

- Policy to preserve and protect historic and prehistoric properties of national significance. Established the National Historic Landmarks Program and set standards for inclusion of landmarks.
- No penalties are directly associated with this act.

Hunting, Fishing and Trapping on Military Lands [An update of the Military Construction Authorization Act]

- Policy requiring the Department of Defense to comply with fish and game laws of the state or territory in which it is located.
- No penalties are directly associated with this act.

Land and Water Conservation Fund Act of 1963 (PL 88-578; 78 Stat 897; 16 USC 460d, 460[1]4 to 460[1]-11)

- Policy to provide funding for the encouragement of development of land and water-based recreation and to ensure the stability of the recreation areas.
- No penalties are directly associated with this act.

Marine Mammal Protection Act of 1972 (PL 92-522; 16 USC 1361)

- Policy to prohibit the taking or importation of marine mammals and marine mammal products.
- Penalties are enforced under 16 USC 1375

Marine Protection, Research and Sanctuaries Act. (Ocean Dumping Act) as amended (PL 92-532; 33 USC 1401)

- Policy to protect and preserve marine habitats as designated by the Secretary of Commerce as sanctuaries. Restricts activities in sanctuaries.
- No penalties under this act; however, many acts may be punishable under RCRA at \$25,000 per day of violation.

Migratory Bird Conservation Act (PL Chpt. 257; 45 Stat 1222; 16 USC 715 *et seq.*)

- Policy to set aside lands for the conservation of migratory birds. Established the Migratory Bird Conservation Commission, which has the mandate to identify and obtain useful lands.
- No penalties are directly associated with this act.

Migratory Bird Treaty Act (PL 65-186; 16 USC 703 *et seq.*)

- Policy to prohibit the taking, possession, and trade of migratory birds, except as permitted by regulations.
- Penalties are enforced under 16 USC 707.

Migratory Game Fish Study Act of 1959 (PL 86-359; 73 Stat 642, as amended; 16 USC 760e)

- Policy to study migratory marine fish of interest to recreational fishing. Provides funding for said study.
- No penalties are directly associated with this act.

Migratory Marine Game Fish Act (PL 86-358; 73 Stat 643; 16 USC 760c-760g)

- Policy that provides funding for various studies of marine game fish.
- No penalties are directly associated with this act.

Mineral Leasing Act of 1920 (30 USC 181 *et seq.*)

- Lays out leasing and prospecting guidelines for coal, phosphate, sodium, potassium, oil, oilshale, gilsanite, and gas on federal lands.
- Penalties for fraudulent leasing: fines up to \$500,000 and/or five years imprisonment.

#### Multiple-Use Sustained Yield Act of 1960 (16 USC 528-531)

- Policy to manage land in concert with the goals of a multiple-use program. Provides funding to support this act.
- No penalties are directly associated with this act.

#### National Environmental Policy Act (NEPA) of 1969 (as amended, PL 91-190; 42 USC 4321-4347)

- Policy to require federal agencies to consider the environmental impact of actions taken. Mandates a decision-making process to achieve the goal. This act is a procedural and declarative act. For any federal action that is not a Categorical Exclusion, an Environmental Assessment must be made in order to determine if a full Environmental Impact Statement (EIS) must be prepared. The EIS must follow specific guidelines outlined in 50 CFR 1500-1508. The act does not require the federal agency to choose the least environmentally destructive alternative, only that the agency considers the environmental impact and alternatives to the action.
- No penalties are directly associated with this act.

#### National Historic Preservation Act (NHPA) of 1966 (as amended, PL 89-665; 16 USC 470 *et seq.*)

- Policy to protect and preserve historic and prehistoric objects, structures, sites, and districts which are included in or are eligible for inclusion in the National Register. Establishes the National Register and the Advisory Council on Historic Preservation. This act defines a decision-making process to be followed when planning an action in the vicinity of a historic area. Requires the development of mitigation plans if historic areas will be affected. Provides funding opportunities to achieve the goals of this act.
- No penalties are directly associated with this act.

#### National Trails System Act of 1968 (16 USC 1241-1249)

- Policy to develop a system of national trails for recreational purposes.
- Penalties are provided for users abusing rules of trails. No penalties for developers or managers of trails.

#### Noise Control Act of 1972 (PL 92-574, 42 USC 4905)

- Policy giving the EPA the power to regulate and enforce noise level standards for commercial sources. Includes such sources as construction, transportation, motors, and engines. However, the FAA has final authority over aircraft noise.
- Penalties - Criminal: \$25,000 per day of violation and/or up to one year imprisonment for the first offense. Fines and prison terms are doubled for second offense.

#### Outdoor Recreation on Federal Lands (16 USC 4601 {1})

- Policy encouraging the development of outdoor recreation activities on federal lands.
- No penalties are directly associated with this act.

#### Resource Conservation and Recovery Act (RCRA) including the Solid Waste Disposal Act (42 USC 6901-6992, as amended)

- Policy and regulations to reduce and limit the amount of solid wastes entering landfills. Prohibits the open dumping of solid or hazardous wastes and encourages reuse and recycling of solid wastes. Provides funding for programs and projects intended to achieve the goal of this act.
- Penalties - Criminal: Fines up to \$25,000 - \$50,000 per day of violation and/or one to two years imprisonment. Knowing Endangerment fines up to \$250,000 and/or five years imprisonment. For organizations, fines up to 1 million dollars. Civil: Fines up to \$25,000 per day of violation. Citizen Suits: A person may bring a civil suit against any person, the U.S. government, or agency which is in violation of this act, subject to minor restrictions.

#### Rivers and Harbors Act of 1899 (33 USC 401 *et seq.*)

- Policy to protect and maintain navigable waterways of rivers and harbors. Restricts certain activities in said areas. Penalties for wrongful deposit of refuse, injury to harbor improvements, and obstruction of navigable waters.
- Penalties - Criminal: Not less than \$300 nor more than \$2500 and/or not less than 30 days nor more than one year imprisonment.

Safe Drinking Water Act (as amended, 42 USC 300f *et seq.*)

- Policy to protect the potable water resources of the nation. Sets standards for drinking water quality and prohibits various activities in said water resources.
- Penalties - Criminal: Fines up to \$50,000 and/or five years imprisonment. Civil: Fines up to \$25,000 per day of violation. Citizen Suits: A person may bring suit against any person, U.S. government, or agency for violation of this act.

Salmon and Steelhead Conservation and Enhancement Act of 1980 (PL 96-561; 94 Stat 3275; 16 USC 3301 *et seq.*)

- Policy to enhance the renewable resource of salmon and steelhead fish and to provide the effective management thereof.
- No penalties are directly associated with this act.

Soil and Water Resources Conservation Act of 1977 (16 USC 2001-2009)

- This act requires the development of a national plan to prevent soil and water resources deterioration.
- No penalties are associated with this act.

Surface Resources Use Act of 1955 (30 USC 601, 603, 611 to 615)

- Policy regarding disposal of mineral and vegetative matter on public lands by the United States. Also deals with tide and claim issues. Expands on the Materials Act of 1947.
- No penalties are directly associated with this act.

Timber Sales on Military Lands [An update of the Military Construction Authorization Act] (10 USC 2665)

- Policy regarding the use of funds generated from timber sales on military lands.
- No penalties are directly associated with this act.

Toxic Substances Control Act (TSCA) (as amended, 15 USC 2601-2654)

- Policy to promote an understanding of effects of chemical substances and mixtures on health and the environment. Encourage research in this area, especially by manufacturers. Regulates those chemical substances and mixtures that pose an unreasonable risk of injury to health or the environment.
- Penalties - Criminal: Fines up to \$25,000 per day of violation and/or one year imprisonment. Civil: Fines up to \$25,000 per violation (each day of continued violation constitutes a separate violation). Citizen Suits: A person may bring a civil suit against any person, the U.S. government, or agency which is in violation of this act.

Water Resources Planning Act and Water Resource Councils Principles and Standards Act of 1965 (PL 89-80; 42 USC 1962 *et seq.*)

- Policy to encourage the conservation, development, and utilization of water and related land resources of the nation.
- No penalties are directly associated with this act.

Watershed Protection and Flood Prevention Act (PL 92419; 68 Stat 666, as amended & 86 Stat 667; 16 USC 1001)

- Policy of the federal government to work with the states to prevent damages due to erosion/flood water and sediments, so as to improve the quality of the nation's land and water resources.
- No penalties are directly associated with this act.

Wild and Scenic Rivers Act of 1968 (16 USC 1271-1287)

- Policy to protect and preserve the nation's wild and scenic rivers. Sets up the National Wild and Scenic Rivers system and criteria for including rivers in the system. Prohibits licensing or federal funding for water resource projects on rivers in the system.

- No penalties are directly associated with this act.

## **Federal Regulations**

### Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities (Title 36, Part 1191)

- Codifies guideline requirements for buildings complying with the Americans with Disabilities Act (ADA). The guidelines are applicable to new design, construction, and alterations of all buildings required to adhere to the ADA. Guidelines are technical specifications regarding such aspects of minimum number of parking spaces, minimum hallway widths, work top levels, etc.

### Curation of Federally-Owned and Administered Archaeological Collections (Title 36, CFR, Part 79)

- This regulation sets forth standards, procedures and guidelines for federal agencies involved in collecting prehistoric and historic remains and artifacts recovered under the authority of the Antiquities Act, the Reservoir Salvage Act, Section 110 of the National Historic Preservation Act, or the Archaeological Resources Protection Act.

### Department of the Interior Supplemental Regulations (for the Archaeological Resources Protection Act of 1979) (Title 43, CFR, Part 7.20) Reserved

- Determination of Eligibility for Inclusion in the National Register of Historic Places (Title 36, CFR, part 63)
- This regulation was developed to aid federal agencies determine the eligibility of property for inclusion in the National Register. The process is based on EO 11593 and regulations of the Advisory Council on Historic Preservation (36 CFR 800).

### Endangered and Threatened Wildlife and Plants (Title 50, CFR, part 17)

- This regulation was developed to implement the Endangered Species Act.

### Environmental Protection and Enhancement (Title 32, CFR, Part 650)

- This regulation defines policies, responsibilities, and procedures for the protection of environmental quality for the Department of the Army in peace time. Discusses water, air, solid waste, hazardous and toxic materials, noise, historic preservation, oil and hazardous substance spills, and environmental pollution prevention.

### Interagency Cooperation-Endangered Species Act (Title 50, CFR, Part 402)

- This regulation provides guidance for interagency cooperation in the implementation of the Endangered Species Act.

### Migratory Bird Permits (Title 50, CFR, Part 21)

- Establishes procedures for obtaining permits to take, possess, or transport any migratory birds or nests.

### National Register of Historic Places (Title 36, CFR, Part 60)

- This regulation defines the National Register of Historic Places. In addition, it sets forth procedures for inclusion of properties on the National Register and describes limitations and benefits of inclusion on the National Register.

### Preservation of American Antiquities (Title 43, CFR, Part 3)

- This regulation defines the jurisdiction over American antiquities located on various federal lands. Provides a process for permitting the examination, excavation, and gathering of objects of antiquity.

### Protection of Archaeological Resources (Title 32, CFR, Part 229)

- This regulation establishes standards and procedures for federal land managers dealing with archaeological resources on public or Indian lands in the United States.

### Protection of Historic and Cultural Properties (Title 36, CFR, Part 800)

- This regulation defines the “106 process” of the National Historic Preservation Act. Seeks to accommodate federal activities while maintaining the historic integrity of properties under the jurisdiction of federal agencies.

Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act (Title 40, CFR, Parts 1500-1508)

- Defines procedures for complying with the National Environmental Policy Act.

The Secretary of the Interior’s Standards for Historic Preservation (Title 36, CFR, Part 68)

- This regulation sets forth standards for preservation requirements of any proposed grant-in-aid project funded through the National Historic Preservation Fund.

## **Executive Orders (EO)**

Environmental Effects Abroad of Major Federal Actions (EO 12114), 4 January 1979.

- Essentially extends the requirements of the National Environmental Policy Act, Marine Protection Research and Sanctuaries Act, and the Deepwater Port Act to federal actions outside the United States.

Exotic Organisms (EO 11987) 24 May 1977.

- Executive agencies shall restrict the use of federal funds, programs, or authority to export native organisms to foreign lands where such species do not occur naturally.

Federal Compliance with Pollution Control Standards (EO 12088) 13 October 1978.

- Places responsibility on the heads of federal agencies for compliance with federal pollution control standards.

Floodplain Management (EO 11988) 24 May 1977, as amended.

- Policy enacted to avoid long and short-term negative impacts associated with the occupancy and modification of floodplains and to avoid direct or indirect support of floodplain development.

Intergovernmental Review of Federal Programs (EO 12372) 16 July 1982.

- Provides opportunity for state and local governments to consult on federal programs to which they would contribute funding or be affected by such programs.

Prevention, Control and Abatement of Environmental Pollution at Federal Facilities (EO 11752).

- Intent to ensure that the federal government in running its facilities, provides leadership in the protection and enhancement of the quality of water, air, and land resources.

Protection and Enhancement of Environmental Quality (EO 11991).

- Amends EO 11514 so as to give the Council on Environmental Quality the power to promulgate procedural regulations regarding the preparation of environmental impact statements and to resolve conflicts between agencies regarding implementation of the National/Environmental Policy Act.

Protection and Enhancement of the Cultural Environment (EO 11593) 13 May 1971.

Protection of Wetlands (EO 11990) 24 May 1977.

- Directs each agency to take action to minimize the destruction, loss, or degradation of wetlands.

Use of Off-Road Vehicles on Public Lands (EO 11644), as amended by EO 11989.

- Sets forth provisions for allowing the heads of executive agencies to determine the allowable usage of off-road vehicles on federal land with the goal of protecting the areas from overuse.

Department of Defense Directives

Accounting for Production and Sale of Forest Products (DOD Directive 7310.5), 25 January 1988.

- Updates policy, prescribes procedures, and assigns responsibilities for DOD reimbursement and for a state's entitlement to a share in net proceeds derived from forest products sold from military installations or facilities.

Archaeological and Historic Resources Management (DOD Directive 4710.1), 21 June 1984.

- Directive provides policy, prescribes procedures, and assigns responsibilities for the management of archeological and historical resources located in and on waters and lands under DOD control.

Environmental Effects Abroad of Major Department of Defense Actions (DOD Directive 6050.7), 31 March 1979.

- This directive provides policy for the decision-making process of considering environmental effects on actions by the DOD undertaken outside of the United States. Essentially, this directive extends the requirements of NEPA to these situations.

Environmental Effects in the United States of DOD Actions (DOD Directive 6050. I), 30 July 1979.

- This directive provides policy that all DOD actions undertaken in the United States will be in compliance with the NEPA mandates.

Natural Resources Management Program (DOD Directive 4700.4), 24 January 1989.

- This directive establishes policies and procedures for an integrated program of natural resources management. It stresses multiple-use strategies.

## **Army Regulations**

Environmental Protection and Enhancement (AR 200-1), 23 May 1990.

- Regulation deals with environmental protection and enhancement. This regulation covers the following topics: water, air, hazardous materials, solid and hazardous wastes, noise, oil and hazardous substances spills, environmental restoration, asbestos, radon, and other programs.

Environmental Effects of Army Actions (AR 200-2), 23 January 1989.

- This regulation sets the policy for the Army to comply with NEPA. Implements the Council on Environmental Quality's regulations, EO 12114, DOD directives 6050.1 and 6050.7.

Historic Preservation (AR 420-40), 15 May 1984.

- This regulation provides procedures and responsibilities for the treatment of historic and archeological properties, sites, objects, districts, etc. on Army land. Also provides instructions on locating and treating historic properties in accordance with NHPA. Establishes a method of creating a Historic Preservation Plan.

Museums and Historical Artifacts (AR 870-20), 9 February 1987.

- This regulation intends to improve the quality and professionalism of Army museums and the preservation of items contained in Army museums.

Natural Resources — Land, Forest, and Wildlife Management (AR 200-3), 28 February 1995.

- This regulation sets the policy and procedures for management of natural resources to ensure the support of the military mission and to ensure conservation, restoration, and appropriate use of renewable resources.